Human Scale Mobility in Minneapolis

Measuring the conditions for walking, biking and other modes of 'human scale' transportation

Chris DesRoches
Kathleen Russell
Yuxuan Guo

May 3rd, 2019

April 30th, 2019
Date of Oral Presentation

Lyssa Leitner
Capstone Instructor

May 3rd, 2019
Approval Date of Final Paper

Forrest Handy, Transportation Planner
City of Minneapolis
Project Client

Human Scale Mobility in Minneapolis

Measuring the conditions for walking, biking and other modes of 'human scale 'transportation

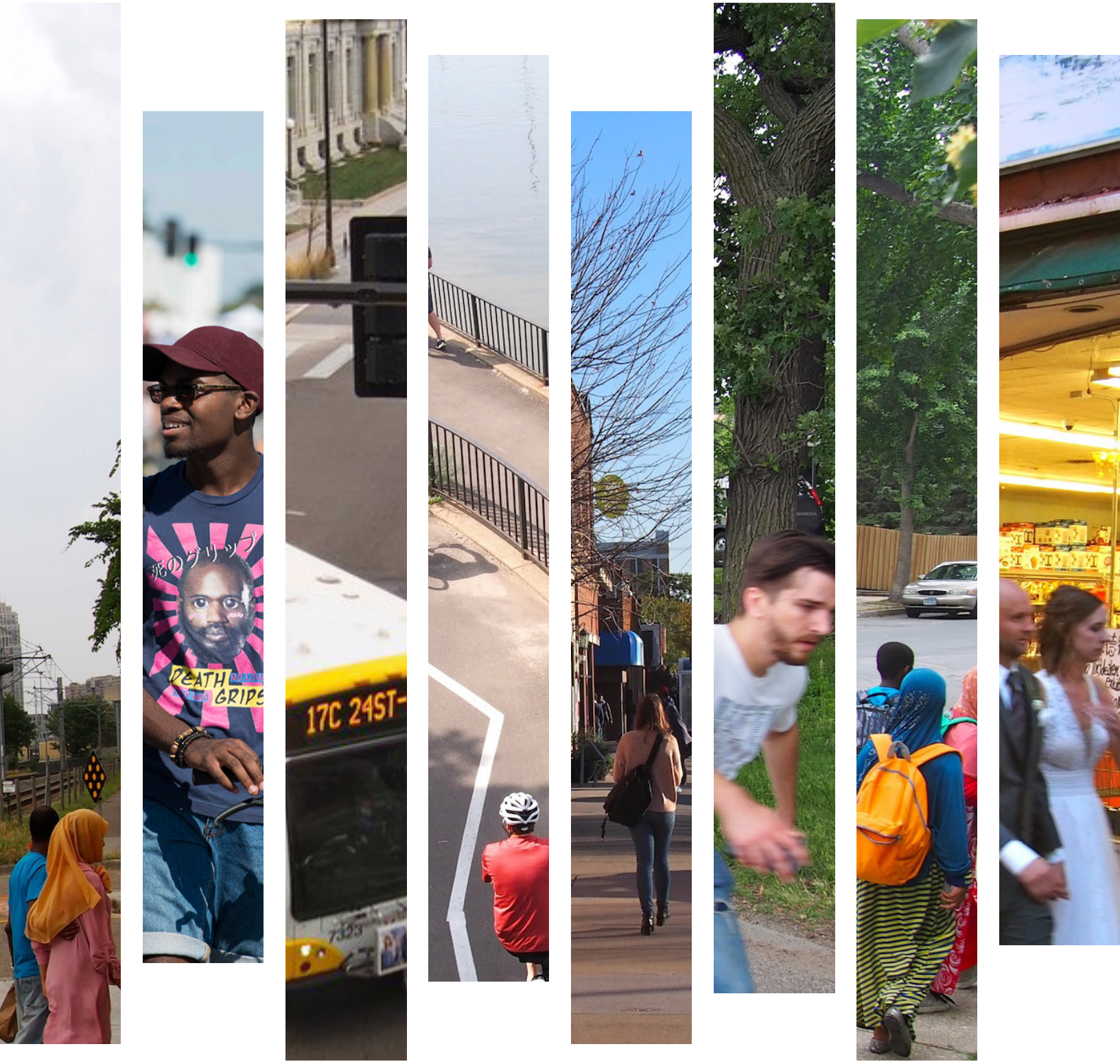


Table of Contents

Both **'Mobility'** and **"Human-Scale Solutions"** are deeply ingrained into the City of Minneapolis' vision for the future. Understanding these terms, their use and the combination of the concepts will help better **define what 'Human Scale Mobility' is, why it is important to promote and where conditions do and don't existing to support it.**

Definition: Human Scale

'Human scale' is a **measurement of physical, social and experiential characteristics of a space, place, process or activity** to determine its relationship to a person.

This measurement is **based both on quantifiable characteristics of a space and how space is perceived** by an individual. Since every person has different preferences, abilities and wants a 'human-scale' space or activity may vary greatly from one person to the next.

Definition: Mobility

Mobility is the **act and/or the ability to move or be moved**.

For the sake of this analysis, we are using the term to define **a person moving or ability to move from one place to another.**

Definition: Human Scale Mobility:

'Human scale mobility (HSM)' **is the movement of a person in a way that directly connects them with both the act of moving and their surroundings**.

When this report refers to 'Human Scale Mobility' options it is referring to:

- ✓ Walking or Wheelchair
- ✓ Biking
- ✓ Short Transit Trips
- ✓ Short Car Trips
- ✓ Scooters + other 'micro mobility' options

Executive Summary

Over the last ten years the City of Minneapolis has laid out a comprehensive vision for the future of mobility and transportation within the city. Through plans like the bike and pedestrian master plans, the Minneapolis 2040 plan and Vision Zero, the City of Minneapolis has set a bold agenda for making "Human Scale" transportation options a valued and integral mode for all residents.

Understanding how to measure and evaluate the City of Minneapolis' progress towards this vision will be essential in ensuring that the vision is realized.

This project seeks to:

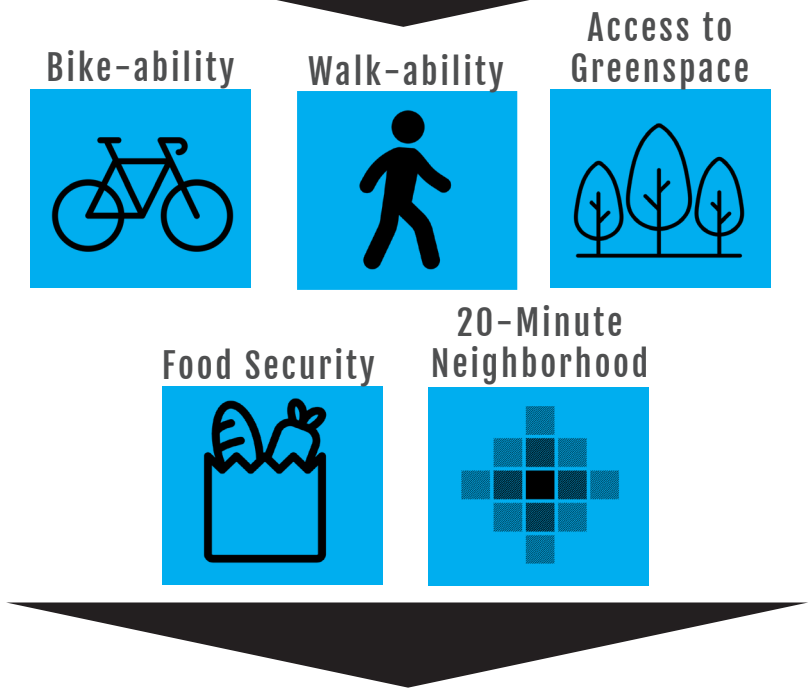
(1) Understand the vision established by the City of Minneapolis around the use, development and effects of "Human Scale Mobility" options

(2) Create an evaluation tool for measuring the current conditions for Human Scale Mobility in Minneapolis

(3) Provide analysis of the results

(4) Suggest recommendations and action steps for implementation of this tool within the City of Minneapolis

Vision to Reality: Project Process



Minneapolis Goals and Vision

Together the planning documents completed by the City of Minneapolis build a holistic vision around transportation in the City of Minneapolis. Together these plans identify **four main modes of non-vehicle transportation: walking or wheelchair, biking, micro mobility (scooters, e-bikes, etc.) and transit**. For this project we have categorized these modes as: **Human Scale Mobility** options.

Trends and Case Study

The City of Minneapolis vision documents discuss and promote key trends and concepts. Academic research, case studies and industry best practices around these trends and concepts **provides analysis methods and metrics to better understand a place in terms of these specific ideas**. This information will help provide the specific measurable features of a census tract.

Evaluation Metrics

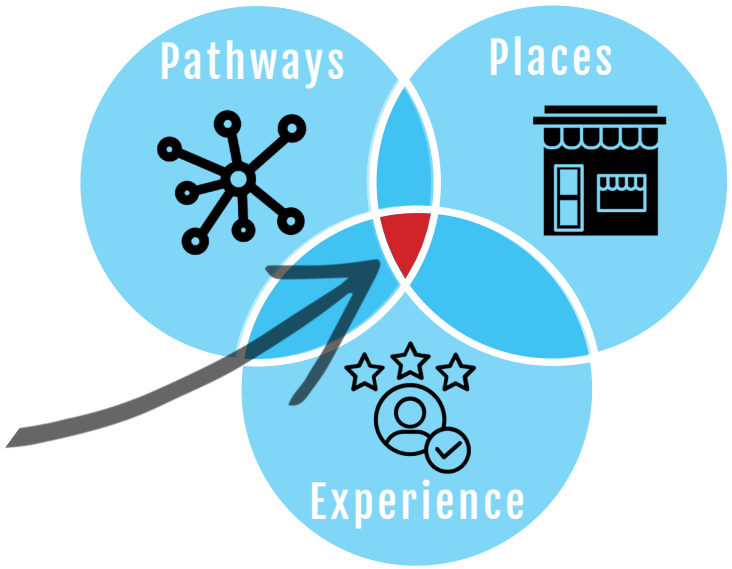
Using the vision established by the City of Minneapolis' planning documents translated through the detailed trends and best practices we establish specific metrics to measure the conditions for Human Scale Mobility within each census tract in Minneapolis.

Metrics and Evaluation

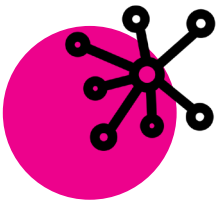
The evaluation metrics are broken up into three categories:

(1) Are the pathways in place?
(2) Are there places to go?
(3) Do you want to make the trip?

These cartegories put together create a holistic picture of an areas conditions to support 'Human Scale Mobility' options.



Are the pathways in place?



Measured as:

- Sidewalks
- Bike Facilities
- High Frequency Transit Stops

Are there places to go?

Measured as:

- Grocery Stores + Restaurants
- Parks
- Places of Social Cohesion

Do you want to make the trip ?

Measured as:

- Safety
- Experience
- Activity

Results

Overall Score

Combining the scores of the three categories builds a final collective score for each of the census tracts in Minneapolis. This score is intended to measure the overall conditions to support "Human-Scale Mobility" options.

The general pattern for the overall score shows a concentration of high scoring census tracts in and around downtown extending southwest towards Bde Maka Ska . Scores remain high in the majority of SouthWest neighborhoods but drop off in the other three quadrants of Minneapolis moving away from the central business district.

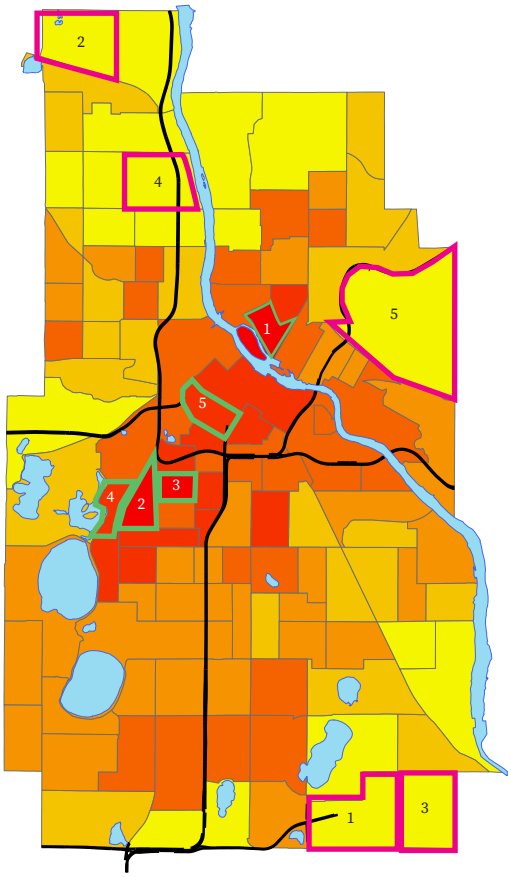
Top 5 Census Tracts:

1. St. Anthony East: 1036
2. The Wedge: 1067
3. Whittier: 0068
4. East Lake of the Isles: 1066
5. Downtown West: 1044

Bottom 5 Census Tracts:

1. Morris Park: 0121.0
2. Shingle Creek: 0001.01:
3. Morris Park: 0121.02
4. McKinley: 1009
5. Mid-City Industrial: 1040

'Human Scale Mobility' Index Score Map

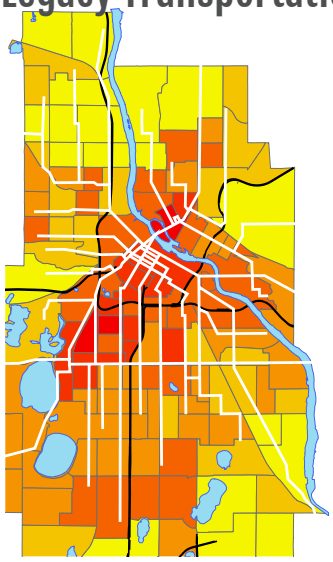


Low Score — High Score

Analysis and Correlations

When comparing the overall HSM score to specific census tract characteristics we found the following characteristics that were correlated with the HSM score results:

Legacy Transportation

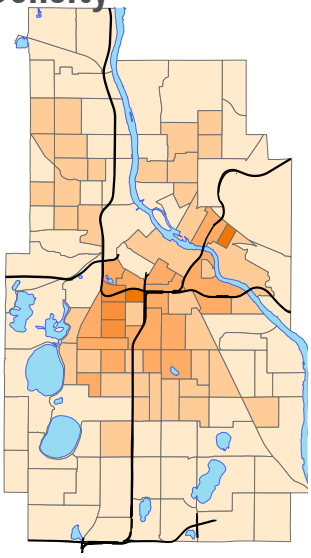


(1) Areas with high historic concentrations of streetcar lines see high scores

(2) The locations where lines terminate see higher scores than adjacent census tracts

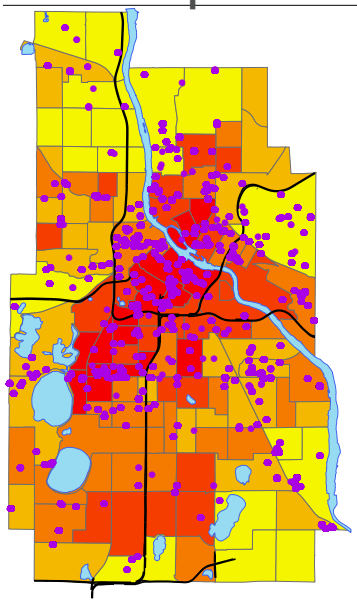
(3) Areas with no historic street car presence have the lowest scores

Density



(1) Correlation between score and density in Wedge/Uptown and the neighborhoods immediately outside of downtown
(2) Tracts on the edge of the city with low density also seem to match low score census tracts
(3) Tracts along 50th Street in South Minneapolis seem to stand out due to their medium-low densities but high overall scores

New Development

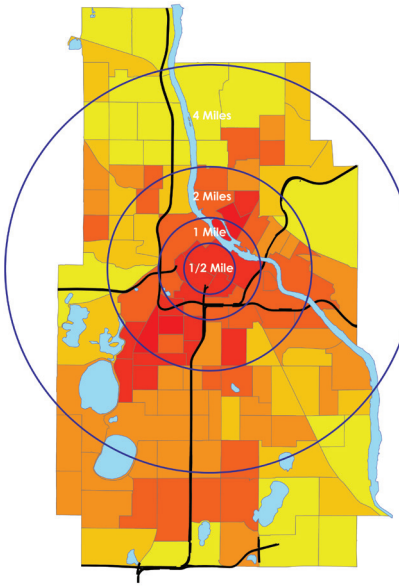


(1) Majority of development occurs in the top 25 census tracts

(2) Strong development patterns along corridors follow patterns in overall Human Scale Mobility score

(3) Very little or no development in low scoring census tracts

Distance from CBD



(1) Strongest correlation of all of the census tract characteristics

(2) Top 10 Census tracts all within 1 mile of downtown. Bottom 5 all 4+ miles out

(3) Major exception to this pattern are high scoring census tracts along 50th St in South Minneapolis

Other census tract characteristics studied but not correlated to overall score:

- Percent White
- Percent Black
- Diversity Index
- Income

Action Plan

The following actions are intended to move the current project and analysis forward by creating a more accurate model that can have positive impacts on the City of Minneapolis' understanding and planning for Human Scale Mobility conditions.

Short Term: within six months

	Action	Description	Cost
1.	**Collect additional data and variables**	Add data and variables to the model to create a more robust and accurate analysis	$–$$
2.	**Share analysis and results with other city departments**	Share and present the results of this model with other city departments to help frame a conversation around transportations connections to other City of Minneapolis goals and visions.	$

Medium Term: six months to three years

	Action	Description	Cost
1.	**Survey residents about human scale mobility experiences and preferences**	By using survey data to better understand residents' preferences around the use of 'Human Scale Mobility', the city can weight the model and metrics for a more realistic picture of the City of Minneapolis' conditions for 'Human Scale Mobility'.	$–$$
2.	**Use 2020 data to update analysis**	Update demographic correlation analysis using the most up to date demographic data.	$
3.	**Incorporate analysis into City's Transportation Action Plan**	Use the model and analysis to help inform the City of Minneapolis' Transportation Action Plan.	$

Action Plan

Long Term: Three - ten years

	Action	Description	Cost
1.	**Build model into the City of Minneapolis' capital project process**	Use the refined model to inform what projects happen and where they happen. Provide analysis of the impacts of projects and incorporate the model into community engagement processes	$$
2.	**Build an accessible tool for public use**	Create an online platform for residents and prospective residents to input preferences and features of Human Scale Mobility Conditions to better understand neighborhoods that best meet their mobility and user preferences.	$$$$
3.	**Use the analysis and results from the model to focus investment, energy and planning around the areas of highest impact and/or need**	**(1)** Invest in census tracts which are high in two metrics and low in the third. **(2)** Focus investment and development around historic streetcar corridors. **(3)** Incest and plan in areas with higher densities but lower 'Human Scale Mobility' condition scores.	$$$

Introduction

Project Structure

Residents of the City of Minneapolis navigate in and through the city in almost an unlimited combination of different ways. These ways of **moving or "modes of travel" are heavily influenced by not only what is available, but the positive and negative experiences of using those different options.**

By understanding why residents choose to travel the way they do, the City of Minneapolis can improve conditions for and perceptions of "Human Scale Mobility" options.

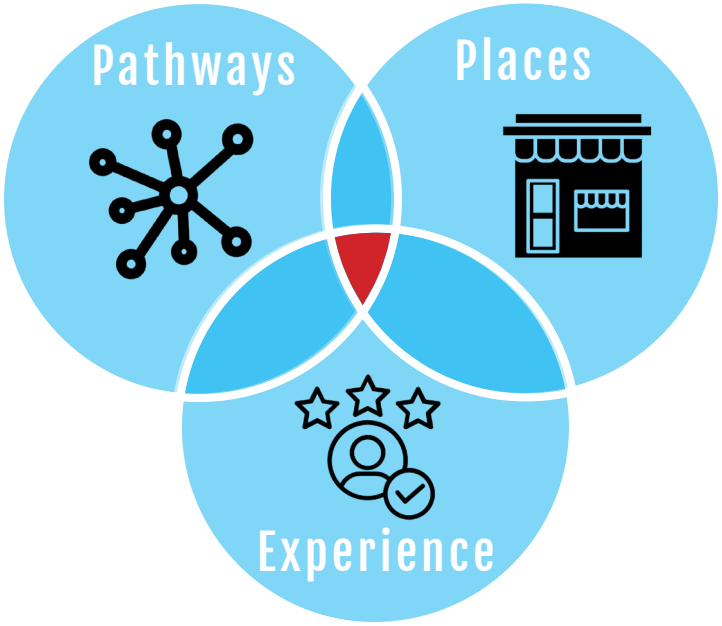
Using available data, each census tract in the City of Minneapolis is evaluated within three categories:

1. Are the pathways in place?
2. Are there places to go?
3. Do you want to make the trip?

Through the creation of metrics within these three categories, the city is able to understand the current conditions in Minneapolis for 'Human Scale Mobility' options and how these conditions compare to the vision established by the city.

For Example:

Even through bike lanes are accessible to residents they may not use them do to fears about safety, crime or having to cross busy streets to get to them. Traditionally, a focus has been placed on the existence of infrastructure to support movements such as walking, biking and transit and less on how people experience using that infrastructure.



Project Structure

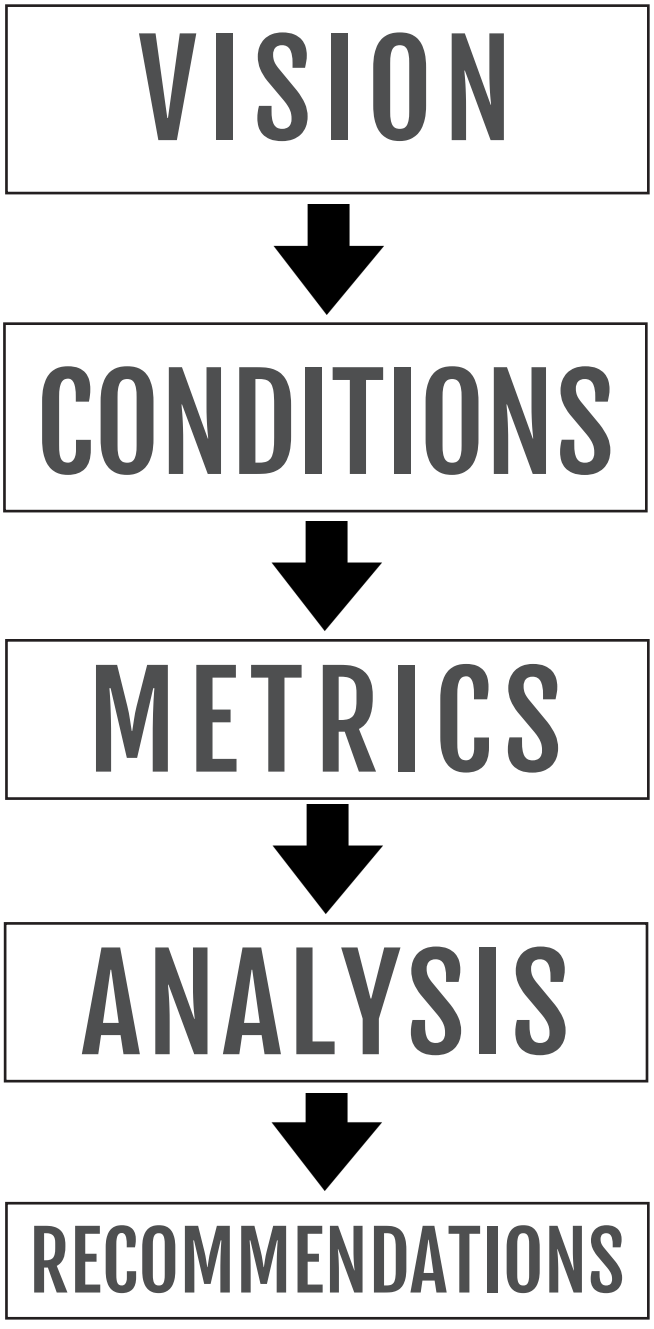
1. Use **Planning and Vision** documents from the **City of Minneapolis** to understand the goals for mobility in Minneapolis

2. **Identify conditions which promote or detract from the use of 'Human-Scale Mobility' options** using research, precedents and industry best practices

3. Create **metrics** to understand where these conditions are occurring in Minneapolis

4. Provide **analysis to better understand the demographic, spatial and historical context** in which these conditions occur

5. Provide **recommendations for further study and implementation** of this model.



The Vision

Minneapolis and 'Human Scale Mobility'

Overview of Minneapolis History, Planning and Visions

The City of Minneapolis has an extensive set of visions and plans that incorporate 'Human Scale Mobility.' Most of the active plans have been developed in the last 10 years, but some of the most relevant plans (MPLS 2040, Vision Zero and the Transportation Action Plan) have been completed in the last year or are currently underway.

As both functional and aspirational documents, these plans help establish the long term vision of Minneapolis. By understanding and quantifying the vision for 'Human Scale Mobility', the City is able to create a framework to better evaluate the conditions in the City of Minneapolis to support this vision. **What places in the City of Minneapolis live up to the expectations of this vision and what places need improvement?**

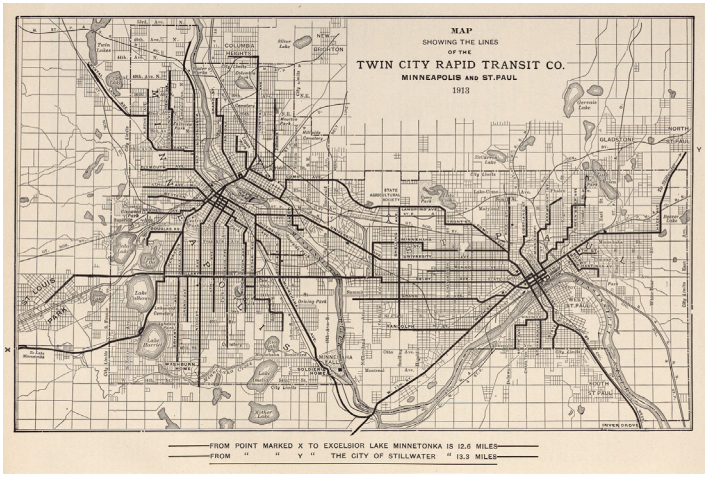
Legacy Transportation System Framework

At the height of the streetcar era in Minneapolis(late 1920's), there were about 523 miles of routes and 200 million riders annually. During this time, more than half of the employment opportunities were in and around downtown. The easiest way to get there was by streetcar. Due to the use and success of the streetcar system, commercial nodes developed along street car lines and concentrated at street car stops. This development pattern provided nodes of services within a short walk of many residential homes.

The build-out of the highway system and main arterial streets to efficiently move car traffic to and from Downtown eliminated many of the commercial nodes and corridors around the city where 'human-scale' use was prioritized. **By 1954 all streetcars had been removed from the City of Minneapolis** (Diers and Isaacs, 2007).

What does this tell us?

By comparing the structure and layout of the historic streetcar system to the results of the analysis around 'Human Scale Mobility' conditions, the City can better understand the impacts and implications of both the streetcar system and its demise on Minneapolis. Are the most walkable areas located along historic streetcar lines? Or did the implementation of 'arterial' road over historic street car lines actually create fewer 'human centered' spaces?



Map showing the 'Twin City Rapid Transit Co' transit lines in 1913.
CITING

Transportation Timeline

City of Minneapolis

1872 Horsecar Routes begin

1891 Trollys become primary mode of travel

1920's Peak Streecar use

1932 Street car use reduced by 50% form peak in 1920

1950 Significant funding of highway projects

1968 Highway 94 open between Minneapolis and St. Paul

1976 Highway 35W open

2004 Blueline opened

2009 Northstar commuter rail

2014 Greenline opened

2016 A-line arterial bus opened

Minneapolis 2040

The Minneapolis 2040 Plan is a master plan developed to guide the vision and direction of Minneapolis over the next 20 years. The Metropolitan Council requires all municipalities within its jurisdiction to produce a master plan every 10 years. The 2040 plan draft was recently adopted by the Minneapolis City Council and was sent to the Metropolitan Council for review.

The plan establishes a vision for many topics and ideas that affect 'Human Scale Mobility' including housing density, retail/commercial nodes, active transportation, sustainability, social cohesion, racial equity and many others. The 2040 plan is the most recent and comprehensive planning document produced by the City of Minneapolis.

Minneapolis 2040 Relevant Policies

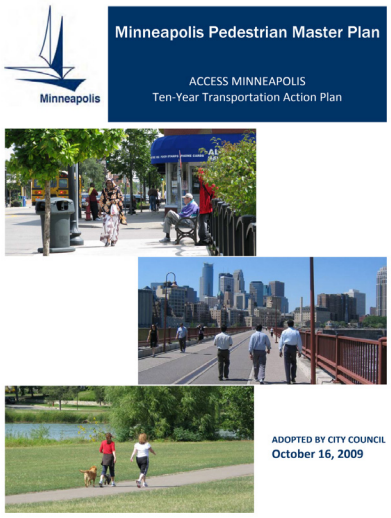
6 Pedestrian Oriented Design
7 Public Realm
8 Public Safety through environmental design
10 Street Grid
12 Lighting
17 Complete Streets
18 Pedestrians
19 Bicycling
20 Transit
#26 Vision Zero
#53 Quality of Life
#63 Food Access
#64 Food Businesses
#76 New Parks
#77 Park Access
#84 Public Safety
#85 Access to Health, Social and Emergency Services
#86 Healthy Food in Institutions

Bike and Pedestrian Master Plans

Incorporated into Minneapolis Transportation Action Planning

Pedestrian Master Plan Goals

The goals of the Minneapolis Pedestrian Master plan provide a framework for how the City of Minneapolis is thinking about pedestrians and what it would like to accomplish through planning and implementation efforts.



Goal 1: A Well-Connected Walkway System
Goal 2: Accessibility for All Pedestrians
Goal 3: Safe Streets and Crossings
Goal 4: A Pedestrian Environment that Fosters Walking
Goal 5: A Well-Maintained Pedestrian System
Goal 6: A Culture of Walking
Goal 7: Funding, Tools and Leadership for Implementing Pedestrian Improvements

Bike Master Plan

The Minneapolis Bike Master plan was developed in 2011 with additional Protected Bikeway Analysis supplementing the document in 2015. The Bike Master plan is truly a holistic document covering all things biking in Minneapolis including the history, specific policy recommendations and engineering plans/details. The plan also provides specific site specific analysis and recommendations.

As the Bike Master Plan provides the overall strategy around bike planning in Minneapolis we will be using the analysis and methods developed in the plan for biking within Minneapolis to inform our analysis of existing conditions.

Vision Zero

"The City of Minneapolis has joined the national Vision Zero movement to eliminate deaths and severe injuries on our streets. To reach this ambitious goal, we are working with people from across our community to develop an Action Plan for making our transportation network safe for everyone. When it comes to decisions about the way our streets look, feel, and operate, protecting human life will always be the top the priority" (Vision Zero,2019).

The Vision Zero engagement and planning process is currently underway but a pedestrian crash study was produced and completed in 2017.

The 2017 Crash Study is also the most current crash and safety data. When the plan is completed metrics identify by the plan that affects both real and perceived safety should be added to the analysis.

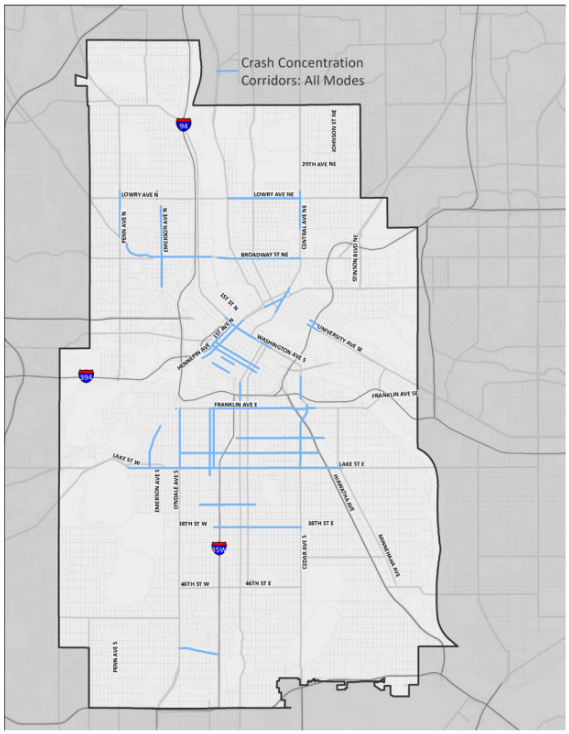


Figure ES-3. Crash Concentration Corridors for All Modes
Source for Bicycle and Vehicle Crash Data: Vision Zero 10-Year Dataset, Source for Pedestrian Crash Data: Pedestrian Crash Study 10-Year Dataset

Note:

Our analysis uses the existence of Crash Corridor's established in the Vision Zero Plan as a metric for measuring safe conditions for 'Human Scale Mobility' within a census tract.

The Context

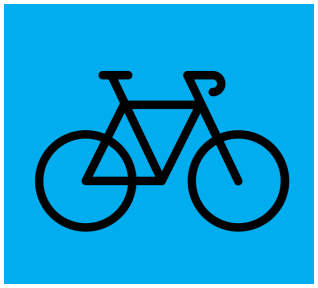
Trends + Precedents

Trends

In order to understand how to measure the City of Minneapolis' current conditions against its long term visions the report must dig deeper into trends and precedents that have informed these visions. By **understanding these concepts in greater detail we are able to identify the specific conditions that support or detract from resident's use of 'human scale' modes** of transportation.

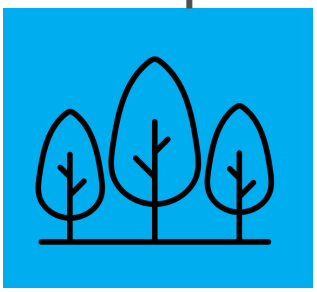
We have chosen **six main trends and concepts that help us better identify the specific methods and tactics for improving conditions** for 'human scale mobility'. **These concepts were selected due to their prevalence within the City of Minneapolis' vision documents, interviews and case study research.**

Bike-ability



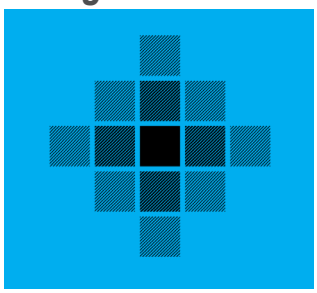
Walk-ability

Access to Greenspace



Food Security

20-Minute Neighborhood



'Walkability'

Whether it is walking to their house to local corner store or driving to a restaurant and walking to the front door, everyone is a pedestrian at one point in their trip. In the City's Pedestrian Master Plan, walking is important for safety, economics, environmental, health, and transportation benefits. Walkers support some of the most vibrant business areas in Minneapolis where **high foot traffic is often coupled with successful business corridors** (Minneapolis Pedestrian Master Plan, 2009).

A walkable space "invites walking by means of a richly connected path network that provides access to the everyday places people want to go" (Southworth, 2006). **The concept of walkability includes not only the physical connection but also places to walk to**. Our analysis of walkability includes both the pathways and places that facilitate walkability.

Walkability is for everyone!
This is especially true for the young, elderly, disabled and others who cannot drive.

In Minneapolis....

Walking is already an important mode of transit in Minneapolis where 6% of commuters commuted by walking in 2007 (Minneapolis Pedestrian Master Plan, 2009).

How can we measure this?

A network of pedestrian activity can be achieved through six physical design factors: connectivity, linkage with other nodes, fine-grained land use patterns, safety, quality of path, and path context (Southworth, 2006). The analysis will develop metrics to attempt to measure the inclusion of these design factors across the city of Minneapolis.

Applies to:

Are the pathways in place?

Are their places to go?

Do you want to make the trip?

'Bikeability'

The City of Minneapolis has identified biking as a mode that has benefits to an individual's health, the environment, and the overall transportation system (Bike Master Plan 2011). The City has been ranked by the Census Bureau, Bike Score and Bicycling Magazine as one of the top places for biking in the nation (Bicycling in Minneapolis, n.d.).

Biking can be encouraged by cities by creating safer, more attractive routes, as well as educating cyclists and drivers (Piatowski et al., 2014). A 2014 study found that the three main barriers to biking were safety and infrastructure, convenience and climate, and cost and concerns associated with cycling (Piatowski et al., 2014).

In Minneapolis.....

Bike infrastructure totals over 250 miles! (2040 Comprehensive Plan)

How can we measure this?

Although Minneapolis is considered at the forefront of cycling cities, it is still important to identify the variables that exist that prevent residents from biking. The analysis will account for the factors that encourage or discourage cyclists like the **existence bike lanes**, **lighting corridors** and **places that make cycling a safe and convenient** choice for transit to essential services.

Applies to:

Are the pathways in place?

Are their places to go?

Do you want to make the trip?

Access to greenspace

Parks have benefits to the physical environment as well as to the health and wellness of those who use them. Urban parks have the ability to improve the atmosphere, hydrology, noise and biodiversity. **Parks positively influence cognitive and physical performance in people as well as create better health outcomes through air quality and space for physical activity**. Additionally, parks provide a location for socialization , gathering and community. (Tempesta, 2015).

Nature deficit disorder is the idea that **children's experiences have shifted over time through reductions in free unscheduled outdoor time, freedom to move around their environment, biking and walking to school and access to nature** (Charles and Louv, 2009).

In Minneapolis.....

Minneapolis has been rated the **top urban park system** by the Trust for Public Land every year from 2013 to today (About Us, n.d.).

Nature deficit disorder has been measured by (Charles and Louv, 2009):

- **Increases in Vitamin D deficiency**
- **Obesity**
- **Traffic**
- **Fear of strangers**
- **Time spent being sedentary**

How can we measure this?

Most, if not all, of the greenspace in the City of Minneapolis are public parks run and maintained by the Minneapolis Park and Recreation Board. Understanding the number of parks within a 1/4 mile of a census tract will provide us with both the quantity and variety of parks that residents have access to on a daily basis.

Applies to:

Are their places to go?

Food Security

Food deserts are largely caused by a lack of grocery stores and markets that sell fresh foods (USDA Defines Food Deserts, n.d.). Residents that live over one mile from a supermarket or large grocery store in urban areas are considered to be in a food desert (USDA Defines Food Deserts, n.d.).

People will purchase food at the businesses that are located closest to them regardless of what they offer, so it is important for the City to confirm that people are able to walk to a grocery store that offers fresh food.

In a study conducted by the US Department of Agriculture in 2016, households in the US made 11 trips to get food per week whether it was to get food to cook or eat out at a restaurant (Todd and Scharadin). Additionally, twice as many trips were made to restaurants or other food businesses compared to supermarkets or grocery stores (Todd and Scharadin, 2016).

NorthMarket in North Minneapolis

In Minneapolis.....

In 2016 **over 60%** of Minneapolis Public School students received **some form of aid for lunch** (2040 Comprehensive Plan).

How can we measure this?

Are there grocery stores and restaurants within walking distance? How many are there? **Both the presence, quantity and variety of grocery stores and restaurants determine if residents are able to access both healthy + sustainable food choices.**

Applies to:

Are their places to go?

20-Minute Neighborhood

In a '20-minute neighborhood' residents have access to services that are used daily without reliance on a personal vehicle. 20-minute neighborhoods reduce the need for a car, lower transit costs and reduce greenhouse gas emissions (What is the 20, n.d.).

Although the concept of the 20-minute neighborhood seems to be widely used by cities including Portland, Detroit, and Eugene there is not one definitive guideline or official study of what should be included in a 20-minute neighborhood.

The 20-minute neighborhood can shift a city's perspective from the need for mixed-use to focusing on exactly which gaps in the service or retail industry are missing from a neighborhood.

In Minneapolis.....

There is currently not a definition of what a '20-minute neighborhood' would entail. The City of Minneapolis should use the metrics established in this project to better define and measure the 20-minute Neighborhood in Minneapolis.

Your groceries are around the corner!
Smaller stores where goods can be bought throughout a neighborhood such as corner stores allow more residents to be within walking distance of their daily needs. This access decreases the need for car travel and increases walking and biking trips.

How can we measure this?

The concept of the 20-minute neighborhood establishes many standards on what constitutes and creates a 20-minute neighborhood. These include density, access to different transportation modes, access to daily needs, connections to community, etc. These standards will provide a baseline for the metrics we use to evaluate many of the City of Minneapolis' visions around 'Human Scale Mobility' options.

Applies to:

Are the pathways in place?

Are their places to go?

Do you want to make the trip?

The Process

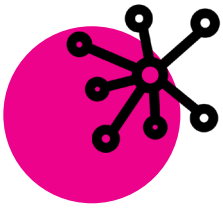
Measuring Places for 'Human Scale Mobility'

The Metrics

In order to **measure how current conditions compare to the vision** established by the City of Minneapolis for 'Human Scale Mobility', specific measurable metrics need to be established. Based on precedent studies and academic research we have created **three categories which serve as determinants of a place's ability to support 'Human Scale Mobility.'**

These categories can be viewed as questions a resident, worker or visitor may ask when considering whether or not to walk, bike or take transit?

Are the pathways in place?



Are there places to go?

Do you want to make the trip ?

Are the pathways in place?

"I live a ¼ mile from a grocery store and there are sidewalks the entire way there. If there were not sidewalks I don't think I would feel comfortable walking there"

"Although I live on a busier street it has a bike lane and I'm able to bike to meet my friends a few blocks away at the local cafe"

"Since the bus comes every 15 minutes, it is easy for me to walk to the bus stop and head to my swim class without being afraid that I'm going to be late"

Are the pathways in place?

The ability to walk, bike and move through spaces is **primarily dependent on the existence of the pathways**.

While some residents may be willing to walk in the street or bike on a busy road the **majority of people will choose the type of transportation that the pathway is designed for**: walking on sidewalks, biking on bike paths.

The **three measurable features we have chosen to identify** if the pathways are in place to support 'Human Scale Mobility are:

1. Sidewalks
2. Bike Facilities
3. High Frequency Transit Stops (15 min)

The existence and prevalence of these features in a neighborhood measures the access people have to the infrastructure to walk, bike and ride. **This infrastructure provides the pathways for movement that are the foundation for 'Human Scale Mobility.'**

What keeps you from walking or biking?
A study done in the most walkable community of 2017, Arlington County, used annotated photos as a way to guide discussion through photography with focus groups. This study **sought to determine the barriers walkers face when choosing to walk or use other non-car means of transportation**. They found that the two overarching **barriers to walking were a disregard to traffic laws by all modes of transportation and lack of options for a simple and comfortable route.**

Are the pathways in place?

METRICS

Feature #1
The existence and quantity of sidewalks

What this is measuring: The ability for residents to walk to and from destinations

Measured as: Lineal feet of sidewalks within a census tract divided by the area of the census tract.

Related City of Minneapolis Vision: Minneapolis 2040 Policies: # 17 Complete Streets, #18 Pedestrians, #53 Quality of Life, #77 Park Access

Feature #2
The existence and quantity of Bike Paths

What is this measuring: The ability for residents to bike to and from destinations

Measured as: The Lineal Feet of marked bike lanes within a census tract divided by the area of the census tract.

Related City of Minneapolis Vision: Minneapolis 2040 Policies: # 17 Complete Streets, # 19 Bicycling, #53 Quality of Life, #77 Park Access, #15 Transportation and Equity

Feature #3
The Existence and Quantity of High Freq Transit Stops

What is this measuring: The ability for residents to access bus stops for shorter more frequent transit trips

Measured as: the number of high frequency transit stops divided by the area of the census tract.

Related City of Minneapolis Vision: Minneapolis 2040 Policies: # 17 Complete Streets, #20 Transit, #53 Quality of Life, #77 Park Access, #15 Transportation and Equity

Are there places to go?

"Fresh foods are really important to our family. We seem to be running to the new grocery store that opened up in the neighborhood 3-4 times a week "

"Since we live on the upper floor of our apartment building getting outside and into green space is something we look forward to everyday. Having a park within a short bike ride of our apartment means we can spend more time at the park"

"After we retired, spending time with friends and neighbors has become an important and essential part of our lives. Having a cafe within walking distance to meet up with a friend or see a neighbor is something that is really important to us"

Are there places to go?

With the routes in place, residents need accessible places and activities to travel to. The more essential theses places and offerings are to the daily lives of residents the less dependent they need to be on a car to accomplish daily tasks or fulfill daily needs.

As we established in the 'Trends and Precedents' section both access to food, green space and social connections are essential to people's daily lives. Outside of commuting, trips to these places make up the majority of peoples' trips.

The **three categories of destinations we have chosen to identify that would best support** 'Human Scale Mobility' options are:

(1) Grocery Stores and Restaurants
(2) Parks
(3) Places of Social Cohesion

The existence and prevalence of these types of places support residents using 'Human Scale Mobility' options by providing the majority of their needs and destinations within a short walk, bike and transit trips.

Where are you heading to?

In 2017, the National Household Travel Survey reported that the trips listed from least often to most often were social/recreational, other family/personal, shopping, commuting, school/church, and work-related businesses.

From 2009 to 2017 shopping, family/personal errands, and social/recreational travel had the greatest decrease in the number of trips taken by vehicle.

Are there places to go?

METRICS

Destination #1
The Existence and Quantity of restaurants + grocery stores

What this is measuring: The ability for residents to access food

Measured as: The number of grocery stores and restaurants per square mile within 1/4 mile of the census tract

Related City of Minneapolis Vision:
Minneapolis 2040 Policies: Policy #63 Food Access, #64 Food Businesses, #86 Healthy Food in Institutions

Destination #2
The Existence and Quantity of parks

What is this measuring: The ability for residents to access parks and green space

Measured as: The number of parks per square mile within a 1/4 mile of the census tract

Related City of Minneapolis Vision:
Minneapolis 2040 Policies: Policy #76 New Parks, #77 Park Access

Destination #3
The Existence and Quantity of places of social cohesion

What is this measuring: The ability for residents to access places to meet people, receive services and access social environments

Measured as: Hennepin County Facilities, Food Shelves, Institutional Business Licenses and libraries per square mile within 1/4 mile of census tract

Related City of Minneapolis Vision:
Minneapolis 2040 Policies: Policy #85 Access to Health, Social and Emergency Services

Do you want to make the trip?

"There is a very busy road a few blocks away from our home. It is very difficult and unsafe to cross. I would rather drive to a large grocery store further away then have to cross this street to get to my neighborhood grocery store"

"It's great to see people out on our street. I feel more comfortable walking and biking at night when there are more people around"

"Although we live in a safe neighborhood I still get concerned about walking at night when I hear about a robbery or crash on a busy street. Sometimes I decide to drive if I recently heard about crime in the neighborhood"

Do you want to make the trip?

Even if the infrastructure is in place and there are places to go, people still may consider many other factors to determine whether or not they are going to walk, bike or take transit to their destinations. These factors can have both positive and negative impacts on an individuals choice to make a walking, biking or human scale mode choice.

The factors can be broken down into three broad categories to describe experience residents have when they are choosing to walk, bike, or take another 'human-scale' mode of transportation:

(1) The physical environment
(2) The amount and type of activity
(3) Safety

(1) The physical environment

The physical environment and aesthetics of space plays a large role in peoples' experiences of spaces. Hot or cold, loud and noisy spaces are not places people choose to be. If a trip to the local grocery store requires walking past large parking lots and across busy and fast moving streets people are much less likely to take that trip. The convenience and joy of walking may be surpassed by the negative environment along the way and people may choose to drive.

(2) The amount and type of activity

Active spaces are engaging spaces and engaging spaces are places people want to be. People will not only spend more time in active and engaging spaces, but go out of their way to experience them.

(3) Safety

Safety is an essential factor that residents consider when choosing whether or not to walk, bike or take another 'human scale' mode choice. Places that are perceived as unsafe due to crime, crashes or streets busy with cars will deter residents from using them.

Do you want to make the trip?

METRICS

Experience #1
The Physical Environment

What this is measuring: The positive and negative experiences residents have in the physical environment

Measured as (per sq. mile) : # of intersections (positive), lineal feet of pedestrian lighting corridors, square feet of parking lots (negative), lineal feet of arterial roads within 1/4 mile

Related City of Minneapolis Vision: Minneapolis 2040 Policies: #10 Street Grid, #12 Lighting, #17 Complete Streets

Experience #2
The Amount and Type of Activity

What is this measuring: The amount and type of activities in a place, making it more or less desirable to be in.

Measured as (per sq. mile): # of outdoor seating/cafe permits (positive), # of vacant properties (negative), # of foreclosures (negative), % change in retail permits from 2016-2020. all within 1/4 mile.

Related City of Minneapolis Vision: Minneapolis 2040 Policies: #6 Pedestrian Oriented Design,#7 Public Realm, #8 Public Safety through environmental design

Experience #3
Safety

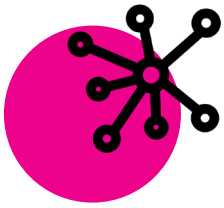
What is this measuring: The perception and/or reality of how safe being in a space is

Measured as: # of specific crimes (negative,see summary for details), lineal feet of 'crash corridors' within 1/4 mile

Related City of Minneapolis Vision: Minneapolis 2040 Policies: #26 Vision Zero, #84 Public Safety

Summary of METRICS

Are the pathways in place?



Walking
- Lineal feet of Sidewalk

Biking
- # of bike lanes

Transit
- # of high frequency transit stops

Notes:
-Metrics are calculated within a 1/4 mile buffer of the census tract for Walking and Transit. Bike lanes are measures within a 1/2 mile buffer.
- All metrics are calculated as per area of the 1/4 (or 1/2)mile census tract buffer

Are there places to go?

Restaurants + Grocery
- # grocery stores
- # of restaurants

Parks
- # of Parks

Places of Social Cohesion
- # of Hennepin County Facilities
- # of food shelves
- # of locations with institutional food licenses (schools, daycare, etc)
- # of Libraries

Notes:
- All metrics are calculated within a 1/4 mile buffer of the census tract
- All metrics are calculated as per area of the 1/4 mile census tract buffer

Do you want to make the trip ?

The Physical Environment
- # of intersections
- Lineal Feet of pedestrian lighting corridors
- Square Feet of Parking(negative)
- Lineal Feet Arterial Roads (negative)

Activity
- # of outdoor seating/cafe permits
- # of vacant properties (negative)
- # foreclosures, year (negative)
- % change in retail, 2016-2020

Safety
- # of crimes (negative)
- Lineal feet of “Crash Corridor” (negative)

Notes:
- All metrics are calculated within a 1/4 mile buffer of the census tract
- All metrics are calculated as per area of the 1/4 mile census tract buffer

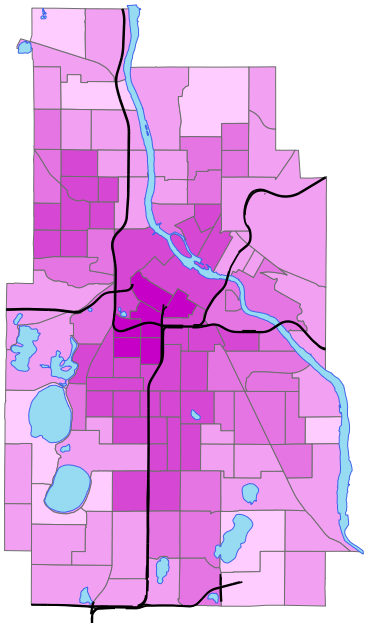
The Results

The current conditions for Human Scale Mobility

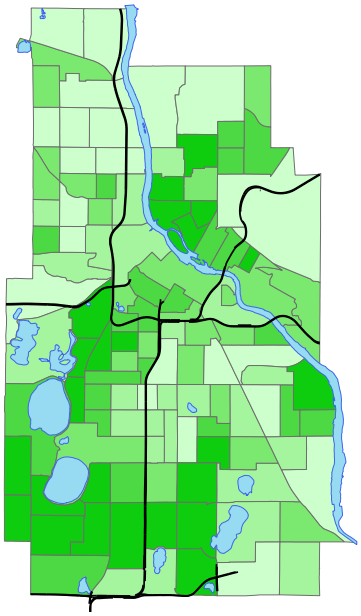
The Results

The following maps show the results of the metrics when applied to Minneapolis census tracts. The results are broken up into separate categories as well as an overall map showing the results of all three categories together.

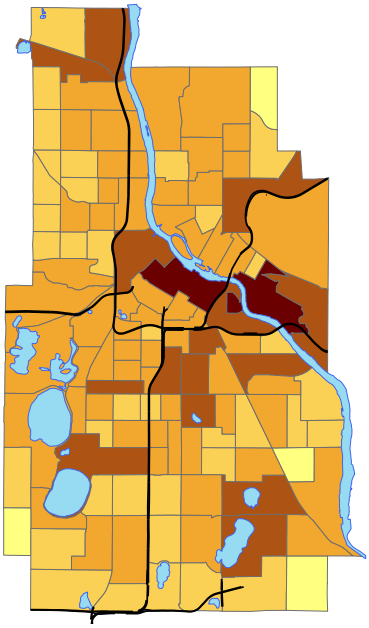
Are the pathways in place?



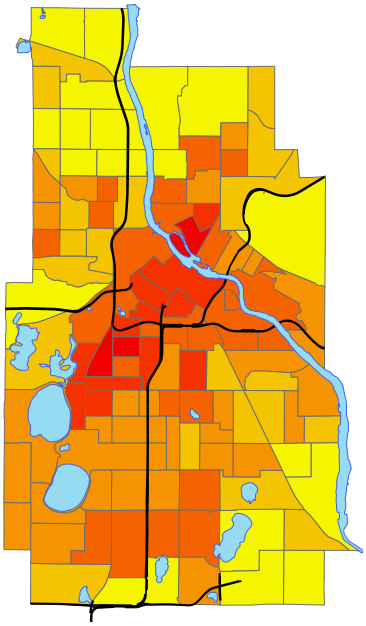
Do you want to make the trip?



Are there places to go?

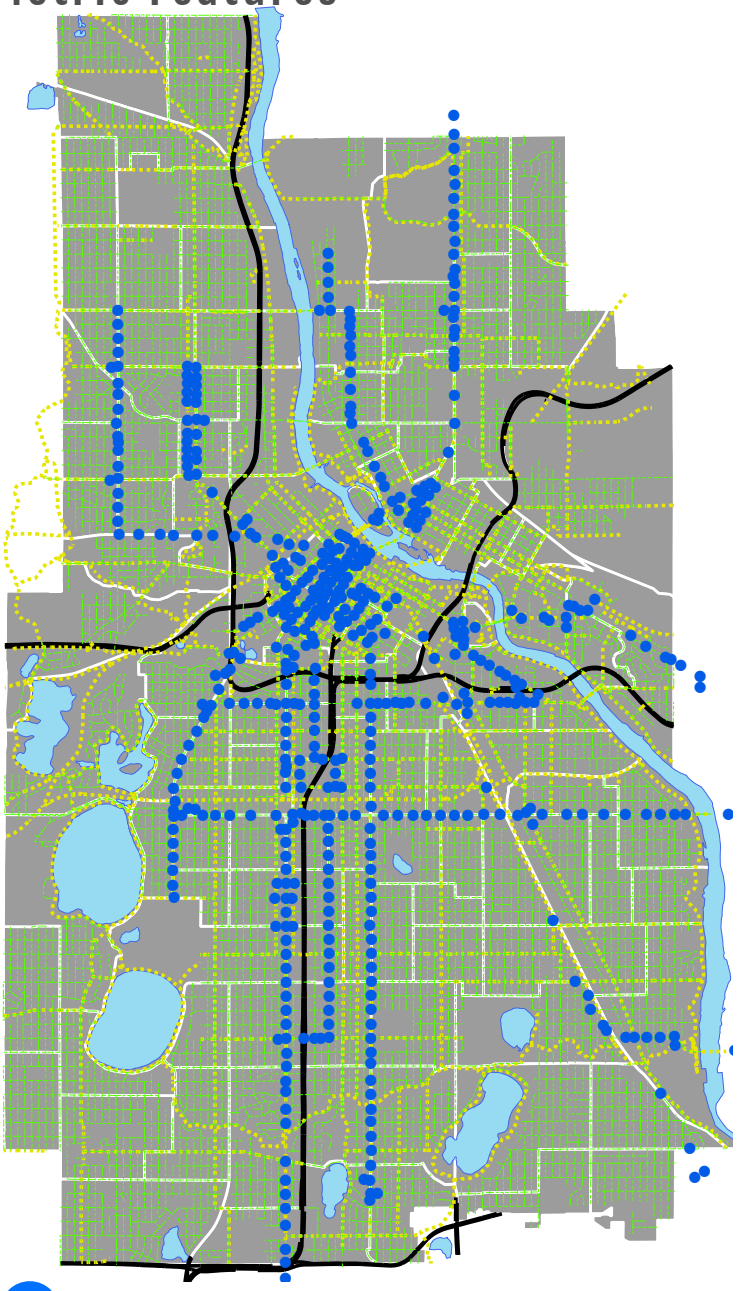


Overall Score



Are the pathways in place?

Metric Features



High Frequency Transit Stops
Sidewalks
Bike Facilities

Sidewalk density is fairly equal across the City of Minneapolis with the exception of some census tracts along the edge of the city where density decreases. The largest gaps in sidewalks can be found in more historic industrial areas or areas with large parks.

High Frequency transit stops are mostly focused around downtown with extensions runnings north and south to serve South Minneapolis, North and North East Minneapolis. The corners of the city are the areas least served by High Frequency Transit stops.

Bike Lanes are spread fairly equally across the city. With heavier concentrations in and around Downtown. The largest gaps seem to be found in South Minneapolis to the East of Lake Nokomis and the Longfellow Neighborhood.

*Within the the category "Are the Pathways in Place?" **all three metrics are weighted equally**.

Are the pathways in place?

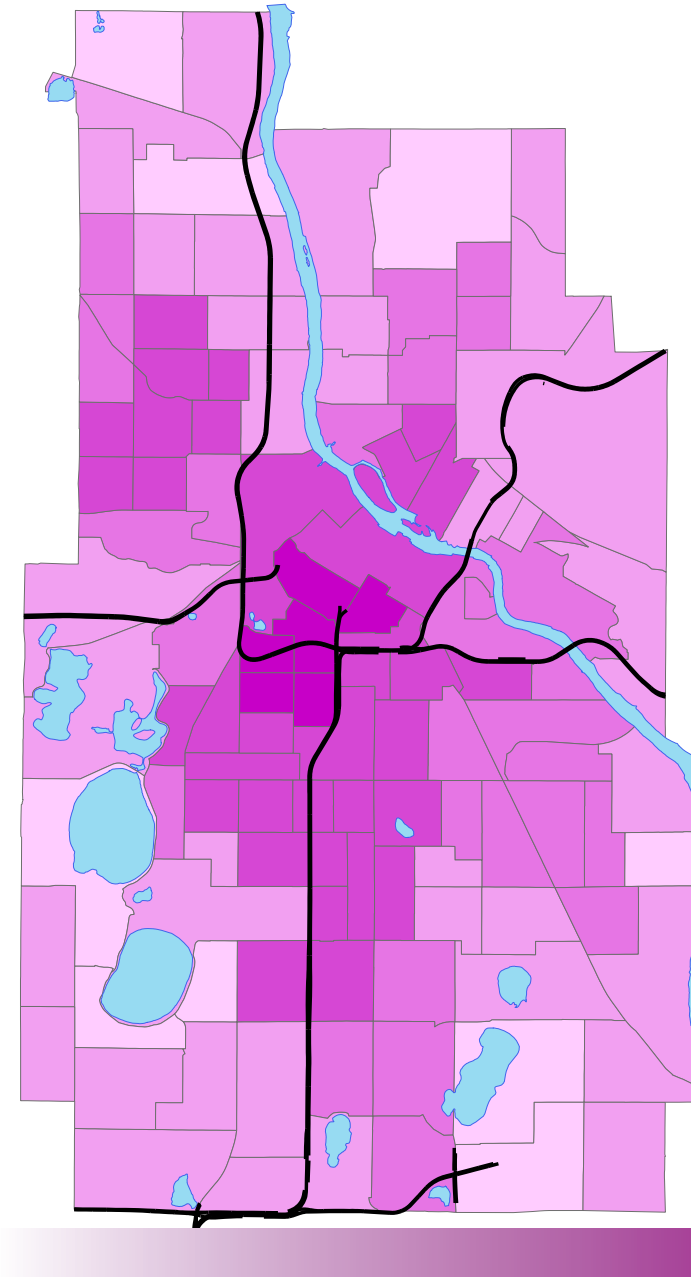
The highest scores for pathways are within downtown and the immediate neighborhoods to the south.

The lowest scoring areas are found on the edge of the city. These areas include the Linden Hills and West Calhoun neighborhoods, the area in and around Lake Nokomis, and areas in the most northern census tracts in North and North East Minneapolis.

The general pattern of scores seem to be most affected by the concentration of bike lanes and high frequency transit stops as sidewalk density is fairly similar across the city.

The areas that are further away from downtown but still see high scores for pathways are the census tracts in the southern section of North Minneapolis and the census tracts along the 35W corridor extending down to the Kingfield Neighborhood.

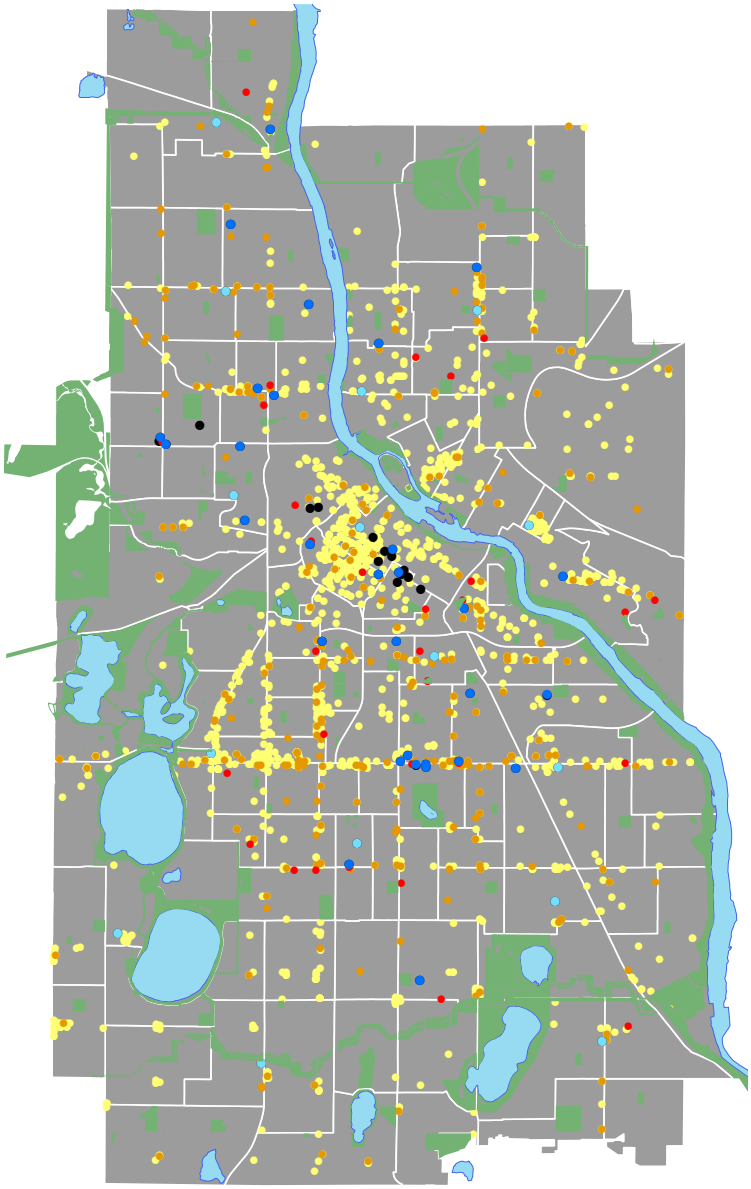
Results



*Within the the category "Are the Pathways in Place?" **all three metrics are weighted equally**.

Are there places to go?

Metric Features



Greenspace in Minneapolis is largely located around water. Large parks around the lakes, creeks and Mississippi River make up a large percentage of the total park area in the City. Neighborhood parks make up the rest of the green space in Minneapolis and are spread fairly equally across the city.

Access to food is not equally spread across the City of Minneapolis. The highest concentration of restaurants are found within downtown, Northeast, uptown and along corridors such as Nicollet, Lyndale, Hennepin, West Broadway and Lake Streets. Concentrations of restaurants decrease significantly towards the edges of the city and grocery stores concentrations are the highest along the corridors.

Places of Social Cohesion are spread out equally across the City of Minneapolis with concentrations Downtown and along arterial roads.

Greenspace
- Parks

Food
- Restaurants
- Grocery

Social Cohesion
- Community Space
- Food Shelves
- Libraries
- Hennepin County

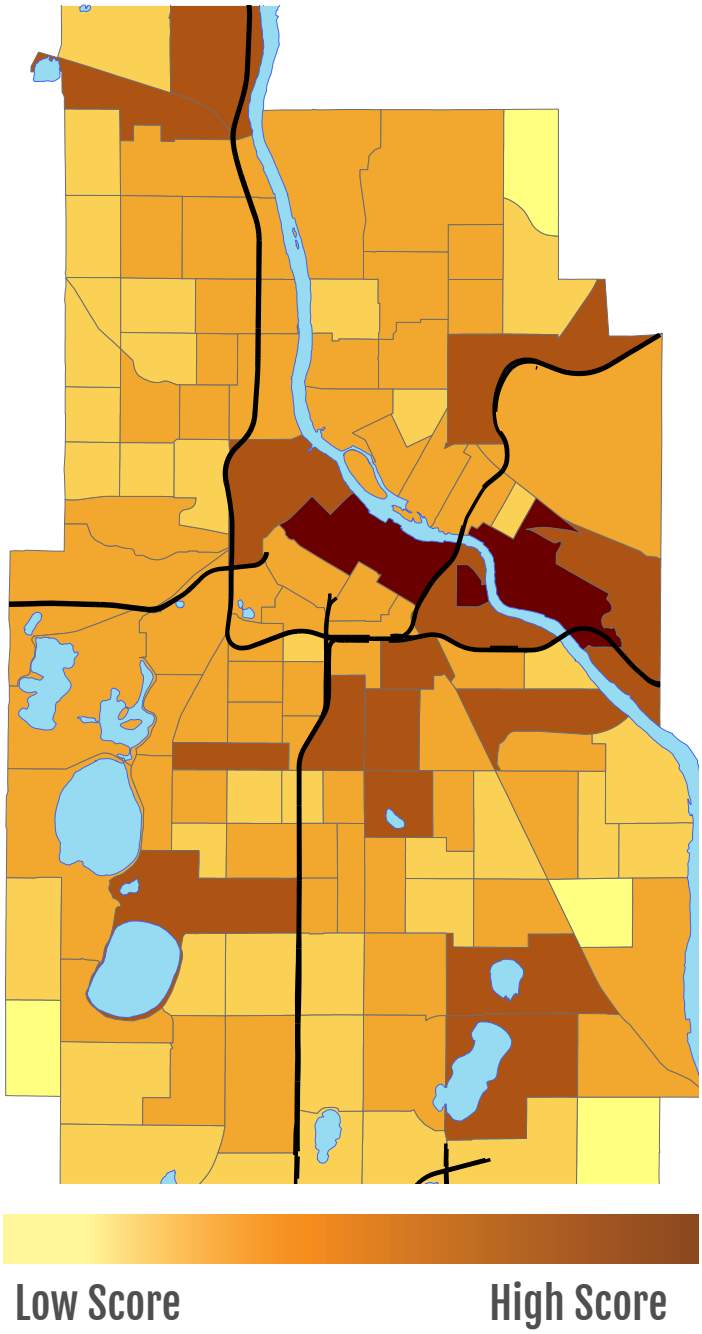
Are there places to go?

The highest scores for places to go are found within Downtown and the University of Minnesota campus area. Other high scoring areas include census tracts immediately adjacent to larger park areas like Lake Nokomis, Lake Harriet and census tracts along busy cultural corridors like Lake Street and Franklin Avenue.

The lowest scoring census tracts are found at the edges of the city. This is especially true for the census tracts on the southern and North West borders of the city.

The general pattern for concentrations of places to go generally radiated out from downtown with pockets of high scoring census tracts focused around green spaces or commercial corridors.

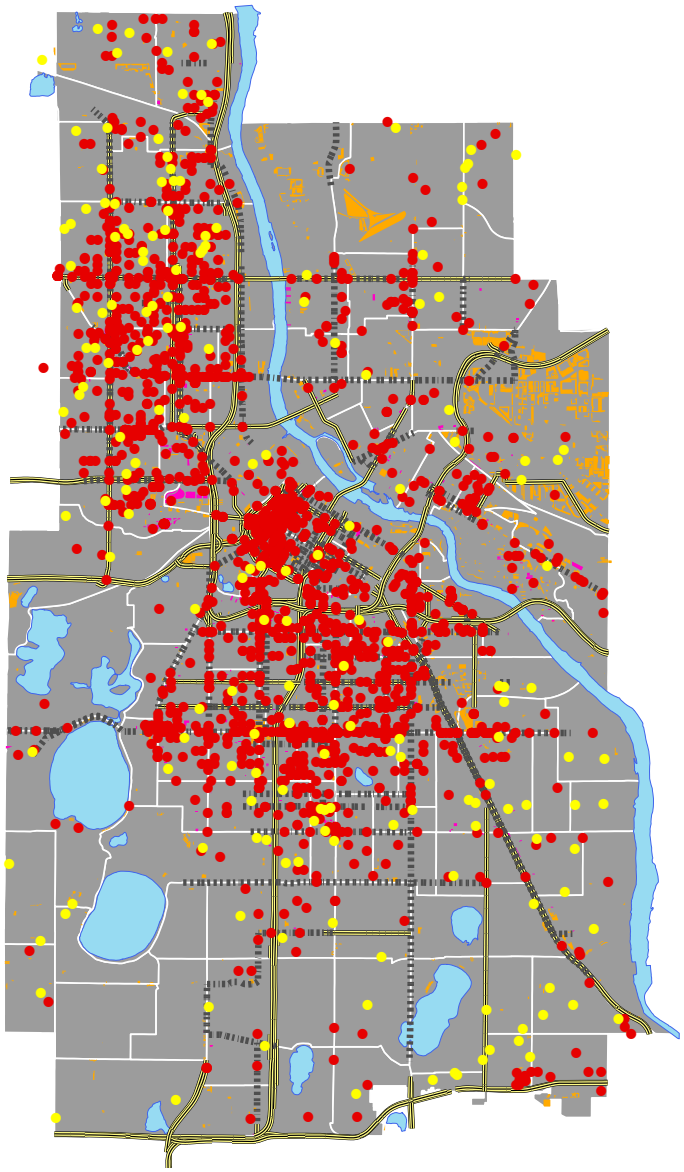
Results



Do you want to make the trip?

The maps below show the locations of the **negative metric features** within each census tract.

Metric Features- NEGATIVE



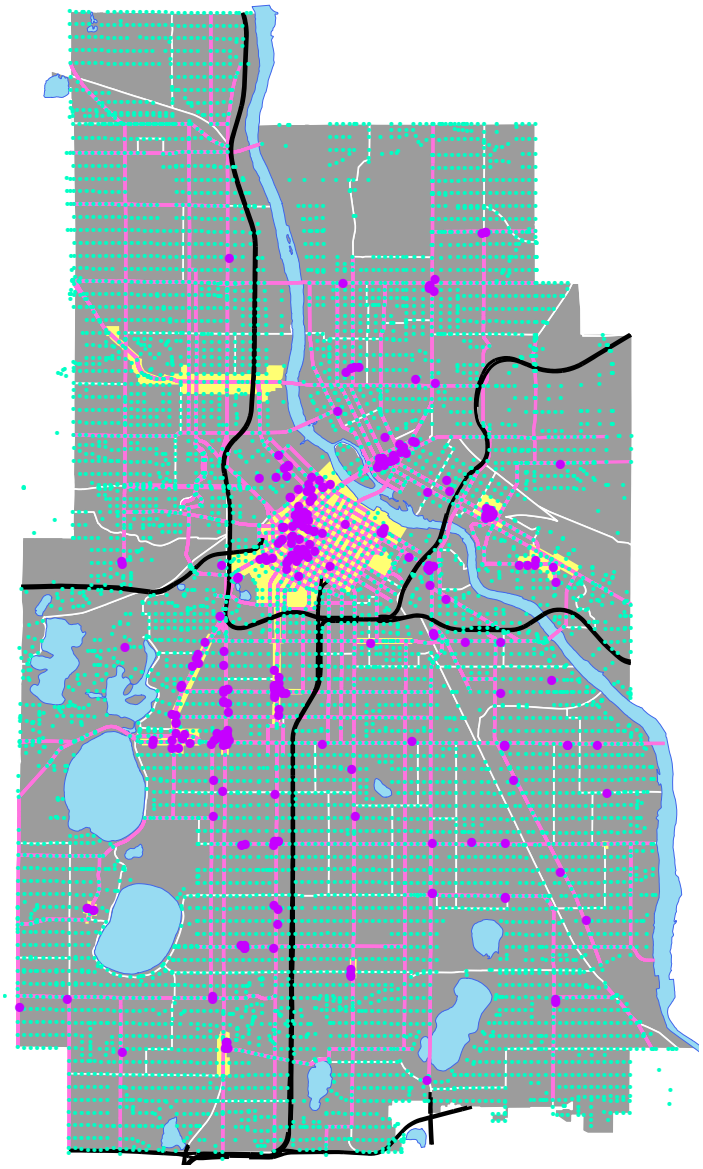
The Negative Safety Conditions are made up of crime and crash corridors. Concentrations of crime can be found in Downtown Minneapolis extending south to around Lake Street as well as large areas of North Minneapolis. Crash corridors are spread fairly equally across the city with exception of the southern most census tract which contain less.

The Negative Experience metrics are also spread fairly equally across the city with the exception of higher than average foreclosures in North Minneapolis and significantly larger areas of parking lots in sections of North East Minneapolis. With a few exceptions, many of the arterial roads are also identified as crash corridors.

Do you want to make the trip?

The maps below show the locations of the **positive metric features** within each census tract.

Metric Features-POSITIVE



Activation

- Sidewalk Cafes
- Special Service Districts

Experience

- Intersections
- Pedestrian Lighting Corridors

The Areas of Activation were measured using the location of sidewalk cafes and Minneapolis Special Service Districts. These metrics represent the "street life" of an area through people's presence and the overall experience on the street. There are high concentrations of both Special Service Districts and sidewalk cafe within the downtown area as well as along commercial corridors like Nicollet, Lyndale and Hennepin Avenues in South Minneapolis. Almost no sidewalk cafes exist in North Minneapolis. South of Lake Street, sidewalk cafes are fairly equally distributed with one about every 1/4 mile.

Positive Experiences are measured through intersections and pedestrian lighting corridors. The density of intersections typically represents high density areas with more opportunities for small commercial/retail nodes. Areas with lots of intersections also can signal areas of higher accessibility. While pedestrian lighting corridors are spread fairly equally across the city, the density of intersections is not. Areas with large features like industrial areas, lakes, rivers or freeways have less intersections. The areas with below average intersection densities include NorthEast and West Central Minneapolis.

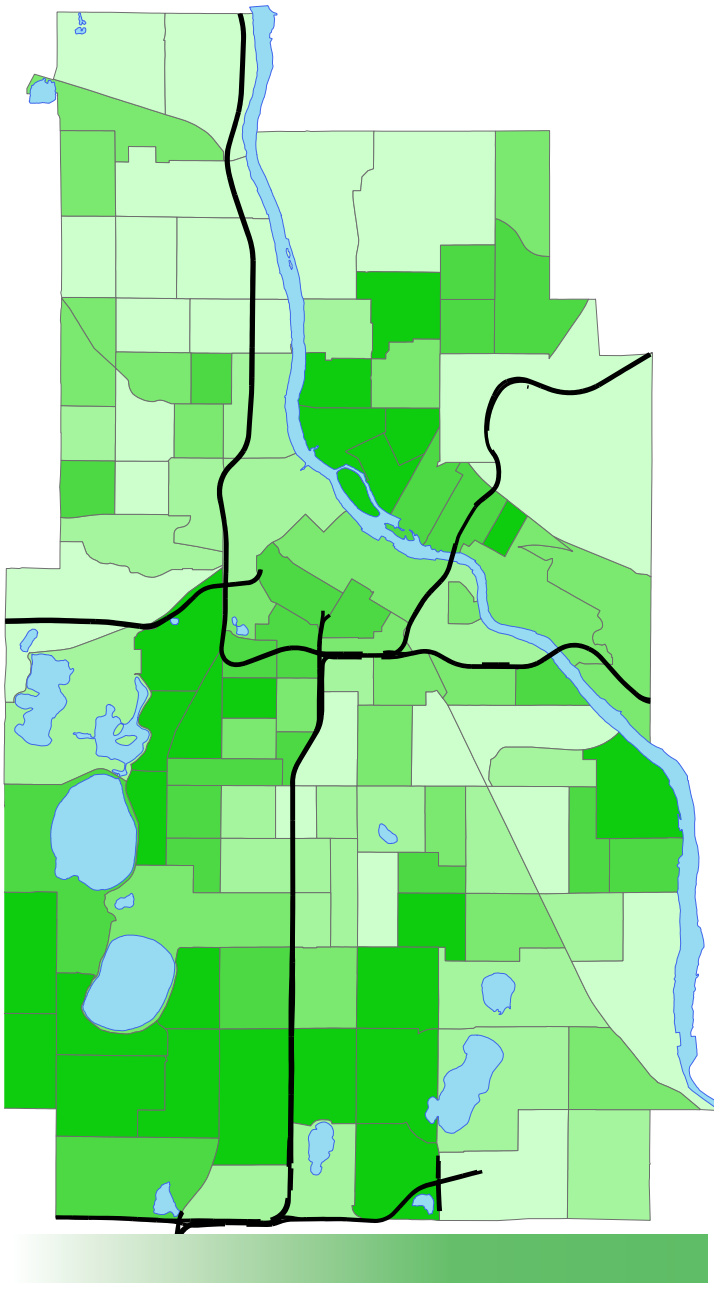
Do you want to make the trip?

The highest scores for a 'human scale' experience occur in South West Minneapolis and the NorthEast neighborhoods immediately adjacent to downtown Minneapolis. Other high scoring areas include areas along the Mississippi in South Minneapolis and the neighborhoods to the southwest of downtown.

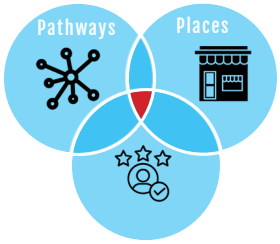
The lowest scoring areas are concentrated in the more northern tracts of North and North East Minneapolis as well as tracts along Hiawatha.

The general pattern shows conditions for positive experiences from NorthEast through SouthWest Minneapolis with pockets of less positive conditions in the neighborhoods of South and North Minneapolis.

Results



Low Score High Score



Overall Score

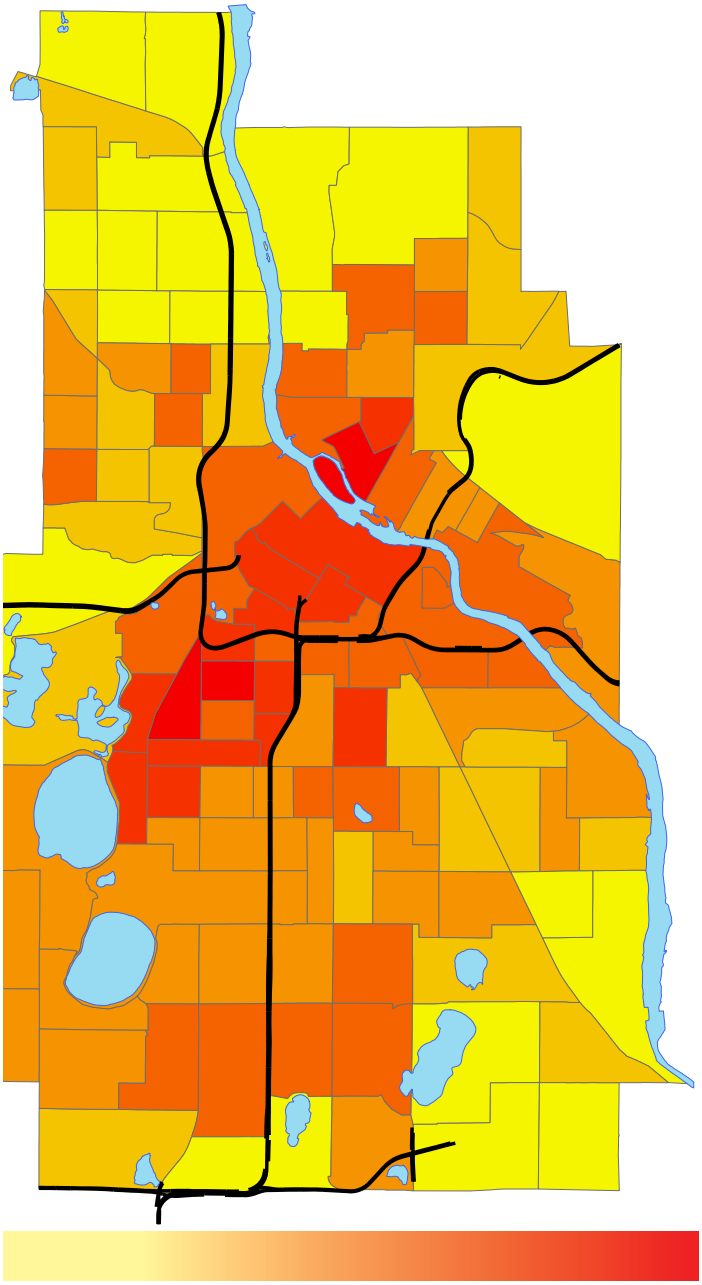
Combining the scores of the three categories produces a final collective score for each of the census tracts in Minneapolis. This score is intended to measure the overall conditions for 'Human-Scale Mobility.' Beyond the bundling of metrics, the three categories were weighted equally. Weighting and valuing these variables differently would produce different results.

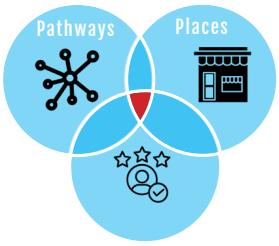
The highest scores exist in a diagonal extending from the East Calhoun Neighborhood across the river to Saint Anthony East in Northeast Minneapolis. Census tract 1036 in North East is the highest rated census tract followed by 'The Wedge' census tract 1067.

The lowest scoring areas exist on the edges of the city but particularly in the Northwest and South East corners. The census tracts with the lowest scores are the two census tracts adjacent to MSP airport in the South East corner of the city (121.01 and 121.02).

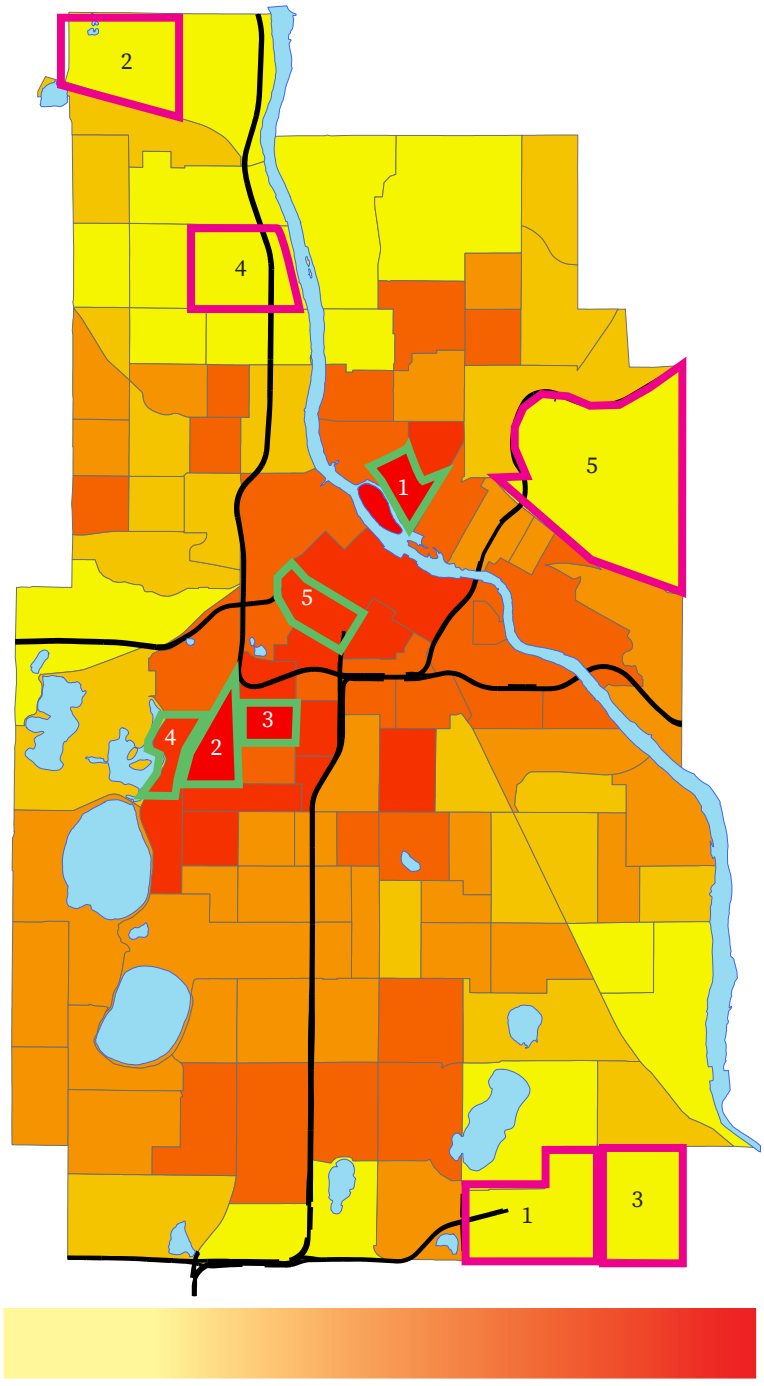
The general pattern for the overall combined score shows a concentration of high scoring census tracts in and around downtown extending southwest towards Bde Maka Ska. Scores remain high in the majority of South West neighborhoods but drop off in the other three quadrants of Minneapolis moving away from the CBD.

Results





Overall Score



Top 5 Census Tracts:

1. St. Anthony East: 1036
2. The Wedge: 1067
3. Whittier: 0068
4. East Lake of the Isles: 1066
5. Downtown West: 1044

Bottom 5 Census Tracts:

1. Morris Park: 0121.0
2. Shingle Creek: 0001.01
3. Morris Park: 0121.02
4. McKinley**:** 1009
5. Mid-City Industrial: 1040

Low Score High Score

The Analysis

The Analysis

To better understand what these results mean for the City of Minneapolis we wanted to analyze how the scores within each census tract compare to the demographic, economic and spatial characteristics of those census tracts. To do this we completed a correlation analysis between the total score and the different characteristics to understand the relationship between these variables and our final score within each census tract.

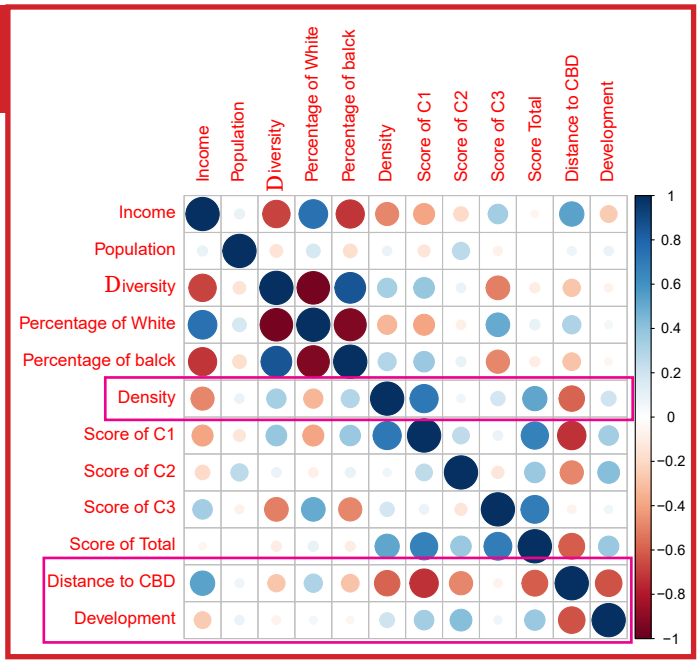
From this analysis we choose to **focus on the variables below which offered the highest correlations to our results**:

(1) The Distance to CDB
(2) Development
(3) Density
(4) Legacy Transportation

Results of Correlation Analysis

Metric Score and census tract characteristics

C1: Are the pathways in place?
C2: Are there places to go?
C3: Do you want to make the trip?

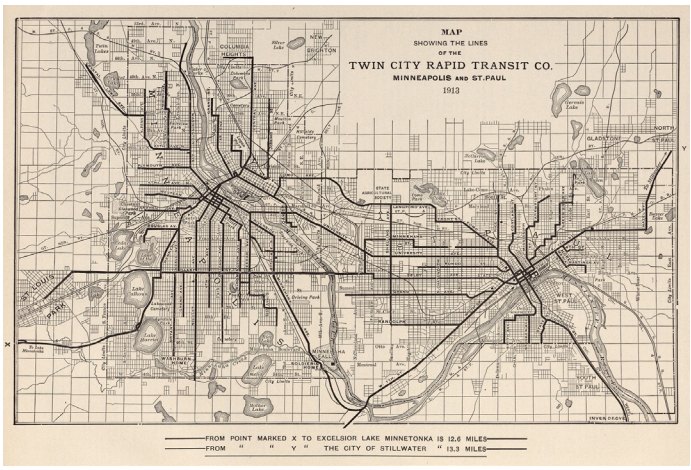


Legacy Transportation

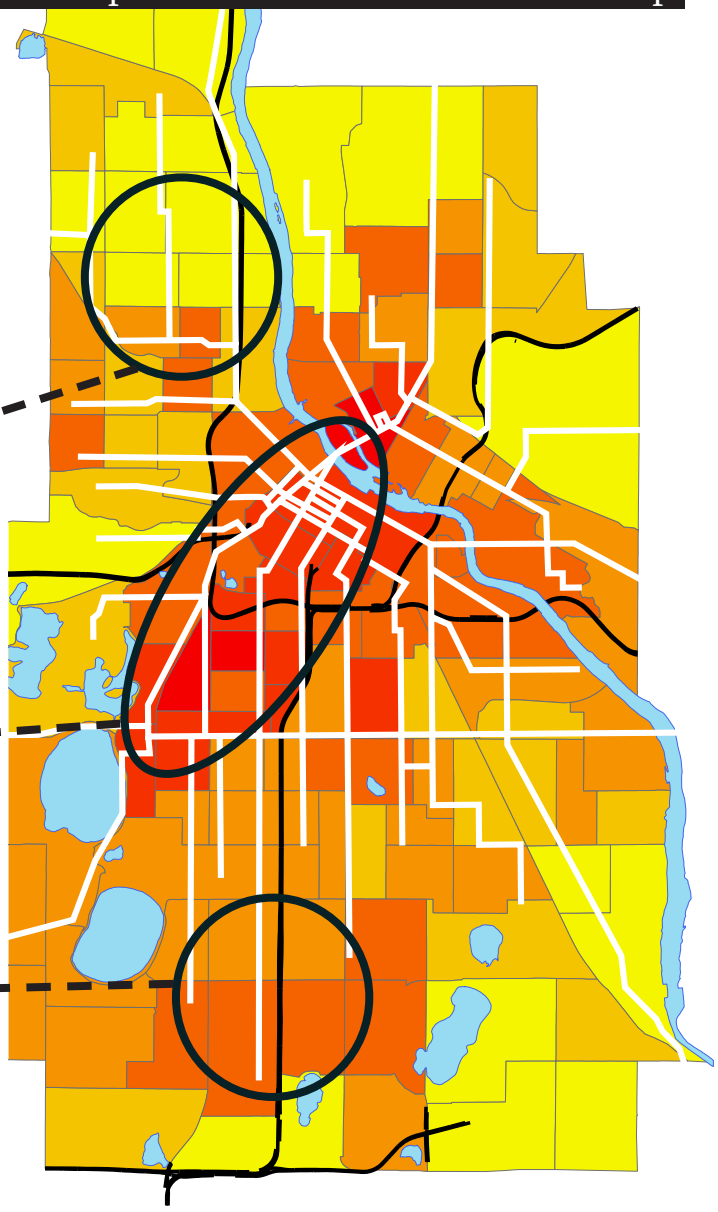
The historic street car lines in Minneapolis created nodes and corridors of activity which were supported by pedestrian activities on the street. Although the streetcar lines are gone, many of these nodes and corridors still exist today. The analysis below looks at the connections between the historic street car lines and the Overall Score for conditions to support "Human Scale Mobility."

When overlaying the historic street car map on the overall 'Human Scale Mobility' conditions score some patterns emerge:

(1) Areas with high concentrations of streetcar lines see high scores
(2) The locations where lines terminate see higher scores than adjacent census tracts
(3) Areas with no historic street car presence have the lowest scores



Minneapolis Street Car and Overall Score Map



North

Parts of North Minneapolis seem to be the exception. While it contained many street car lines many of its census tracts scored below average.

Downtown/NE/Wedge

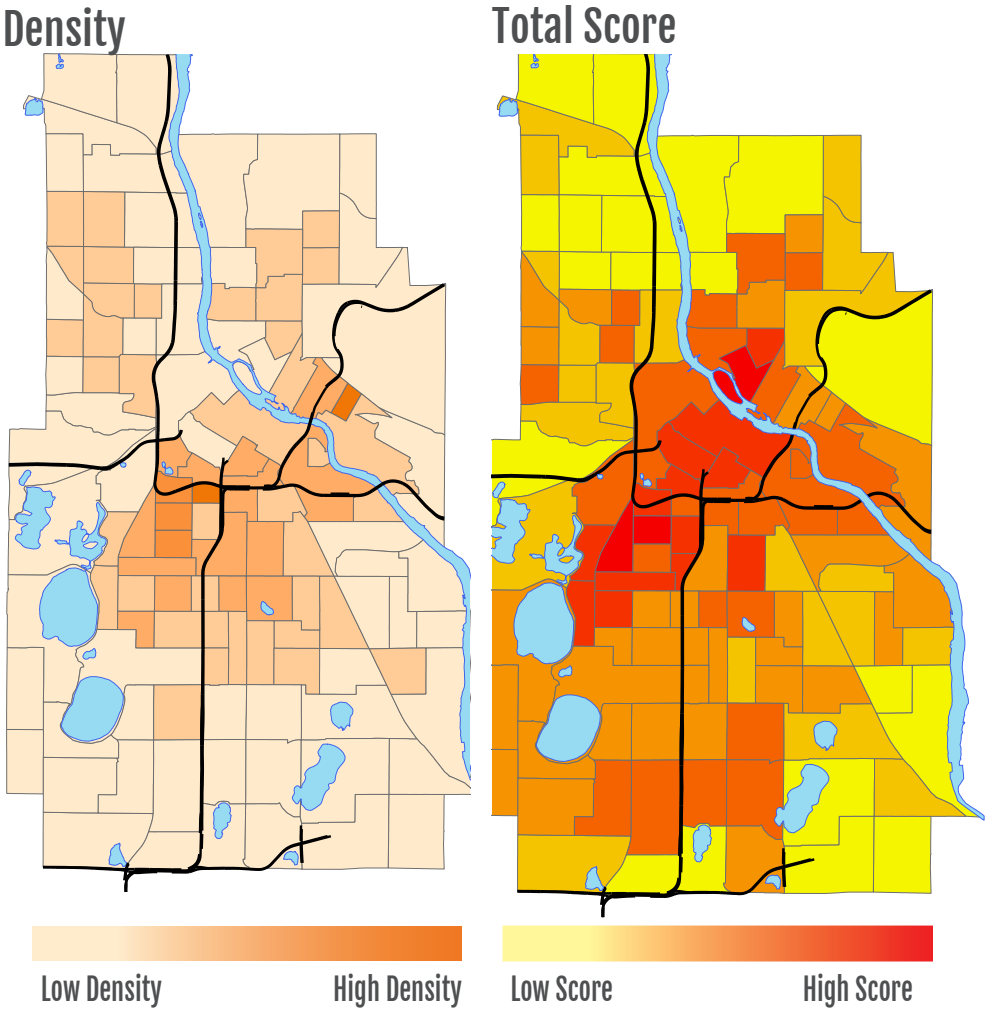
High concentrations of streetcar lines also correspond with higher scores. This is especially true in NorthEast + the Wedge (highest scores) where multiple lines converge.

SouthWest

In Southwest Minneapolis the highest scoring census tracts are found in the census tracts where the street car lines terminated.

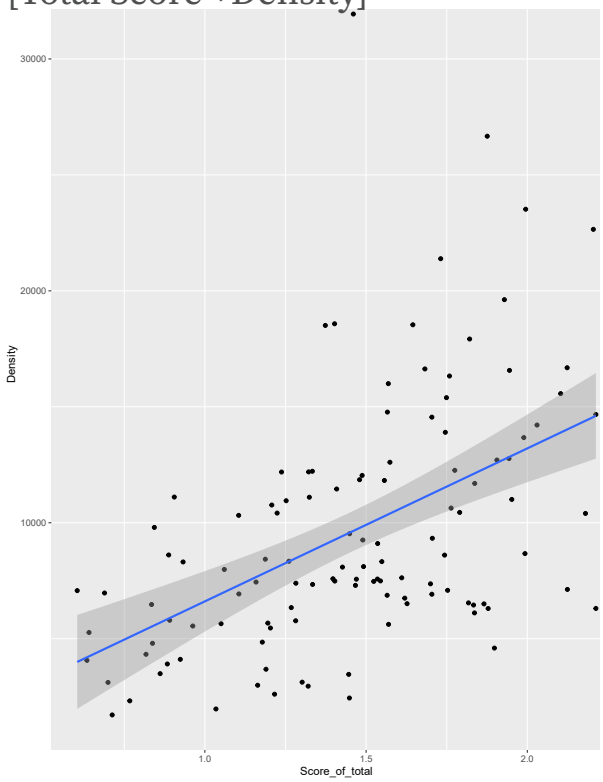
Density

When comparing the maps to the right you can see a strong correlation between density and total score. This pattern is particularly apparent in the Wedge/Uptown neighborhoods and the neighborhoods immediately outside of downtown. Neighborhoods on the edge of the city with low densities also seem to match with low score census tracts. The census tracts along 50th Street in South Minneapolis seem to stand out due to their medium-low densities but high scores.



Correlation Plot

[Total Score +Density]



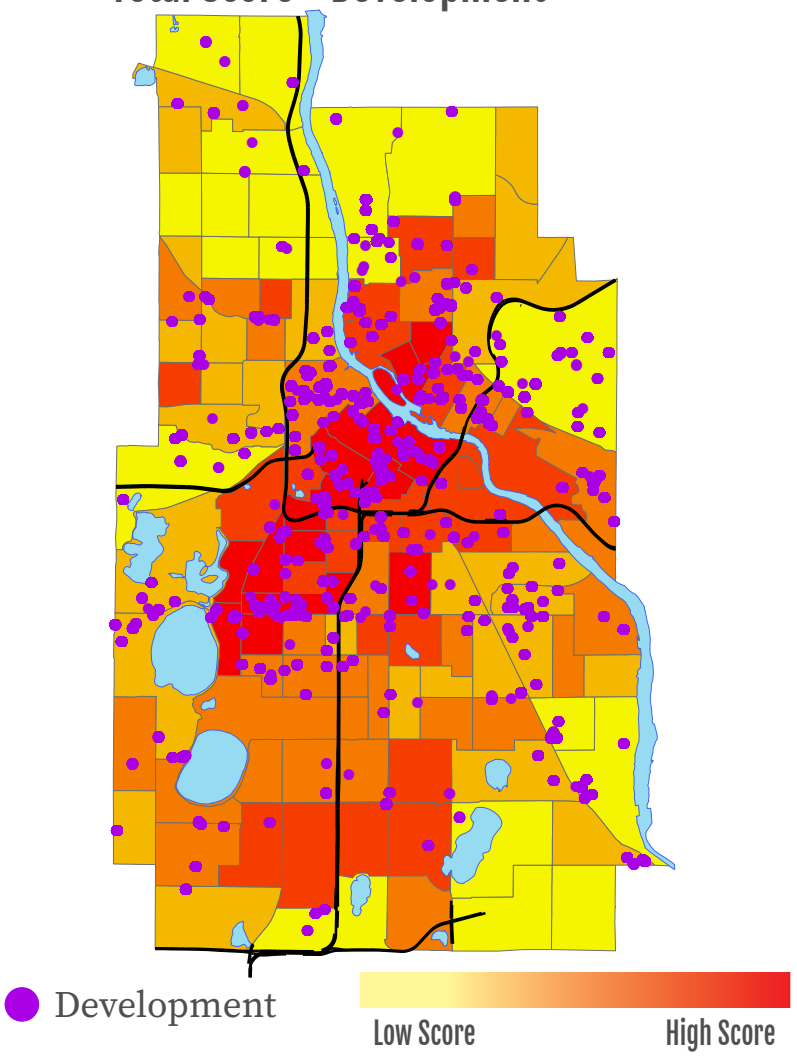
The correlation plot to the left displays the density scores with the overall scores for 'Human Scale Mobility' conditions.

There is a positive correlation between the total scores and density. This shows that census tracts with higher densities tend to have higher scores in Human Scale Mobility conditions on average.

Development

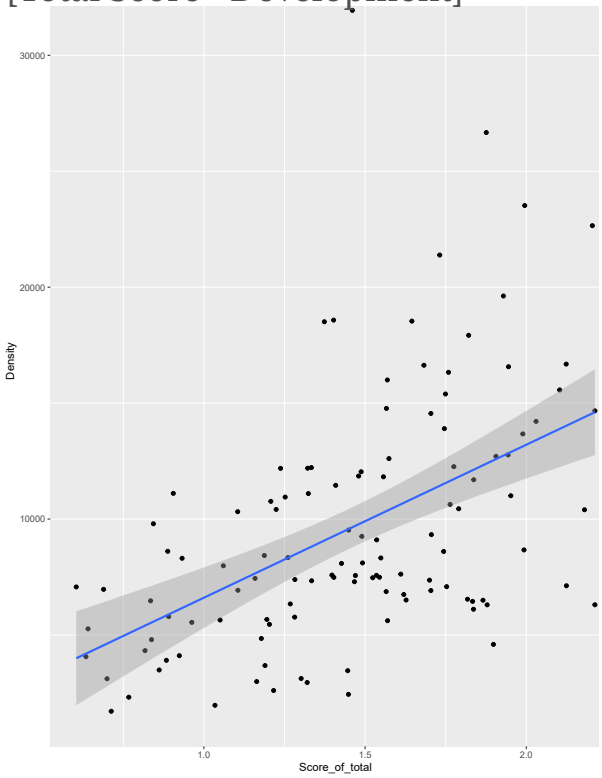
The map on the right is the total score map overlaid with points where development is either approved, in progress or closed. The highest concentration of the points is aligned along with the areas with the highest scores following a diagonal pattern from Bde Maka Ska to Northeast Minneapolis. The areas in South and Southwest Minneapolis which have high rankings for 'Human Scale Mobility' conditions do not have as much development as compared to other census tracts that have the same level of 'Human Scale Mobility' conditions around downtown.

Total Score + Development



Correlation Plot

[Total Score +Development]



The correlation plot to the left displays the number of developments with the overall scores for 'Human Scale Mobility' conditions.

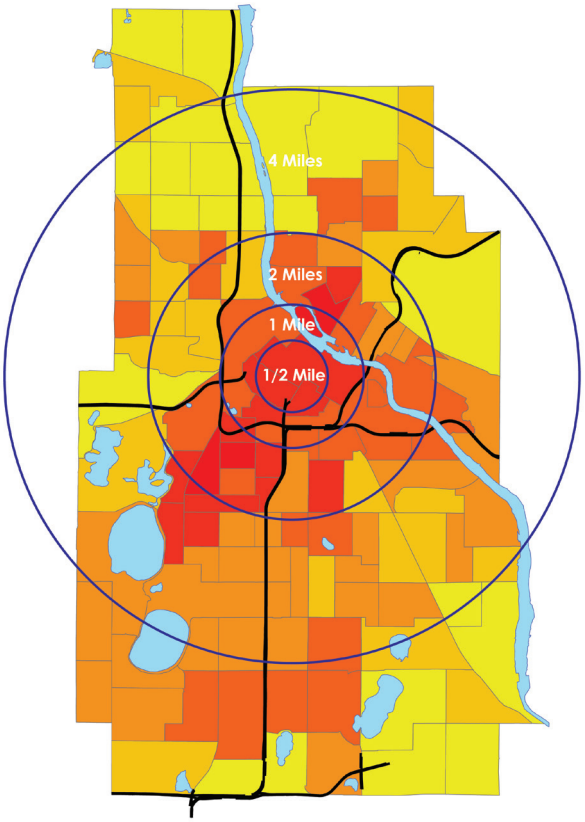
There is a positive correlation between the total scores and number of developments. This shows that census tracts with higher number of developments tend to have higher scores in 'Human Scale Mobility' conditions on average.

Distance to CBD

The distance of a census tract to Minneapolis' central business district (Census Tract 1054) is negatively correlated to its total HSM score. As is shown in the map to the right the majority of the highest scoring census tracts are within 2 miles of downtown.

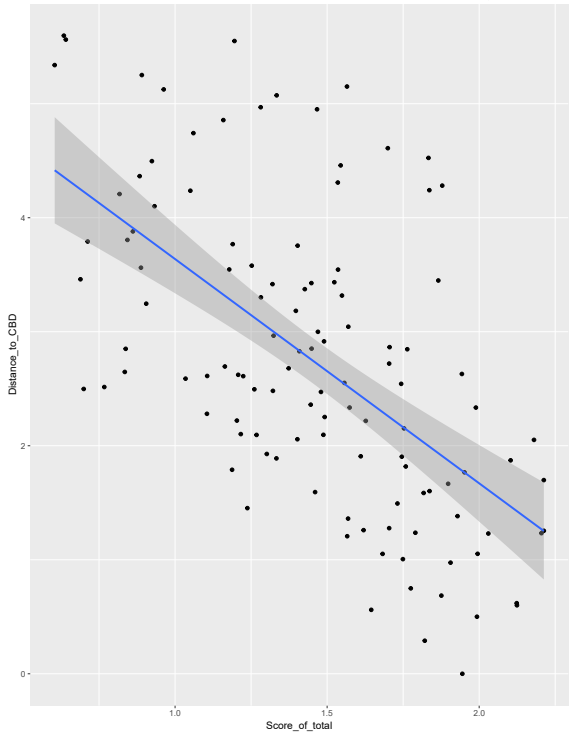
The main exception for this rule are the census tracts located just south of 50th Street. These tracts tended to see higher than average scores (as compared to similar distance from CBD census tracts) for "Do you want to make the trip?" due to their very low crime rates and the existence of commercial corridors with cafe seating , a special service district and lighting corridors.

Total Score + Distance to CBD (CT 1054)



Correlation Plot

Total Score + Distance to CBD (CT 1054)



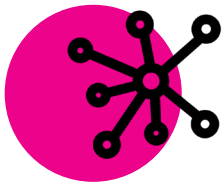
The correlation plot to the left displays the distance to the central business district with the overall scores for 'Human Scale Mobility 'conditions.

There is a negative correlation between the total scores and distance to the central business district. This shows that census tracts further away from the central business district tend to have lower scores in 'Human Scale Mobility' conditions on average.

Rank Analysis

The analysis below looks to identify specific census tracts that rank high (top 50) in two categories and low (bottom 50) in one category. If a census tract is high in two categories it is on the cusp of being a great place for 'Human Scale Mobility'. By identifying these specific census tracts the City of Minneapolis will have a better understanding of where to invest resources to obtain the greatest return on investment.

Categories



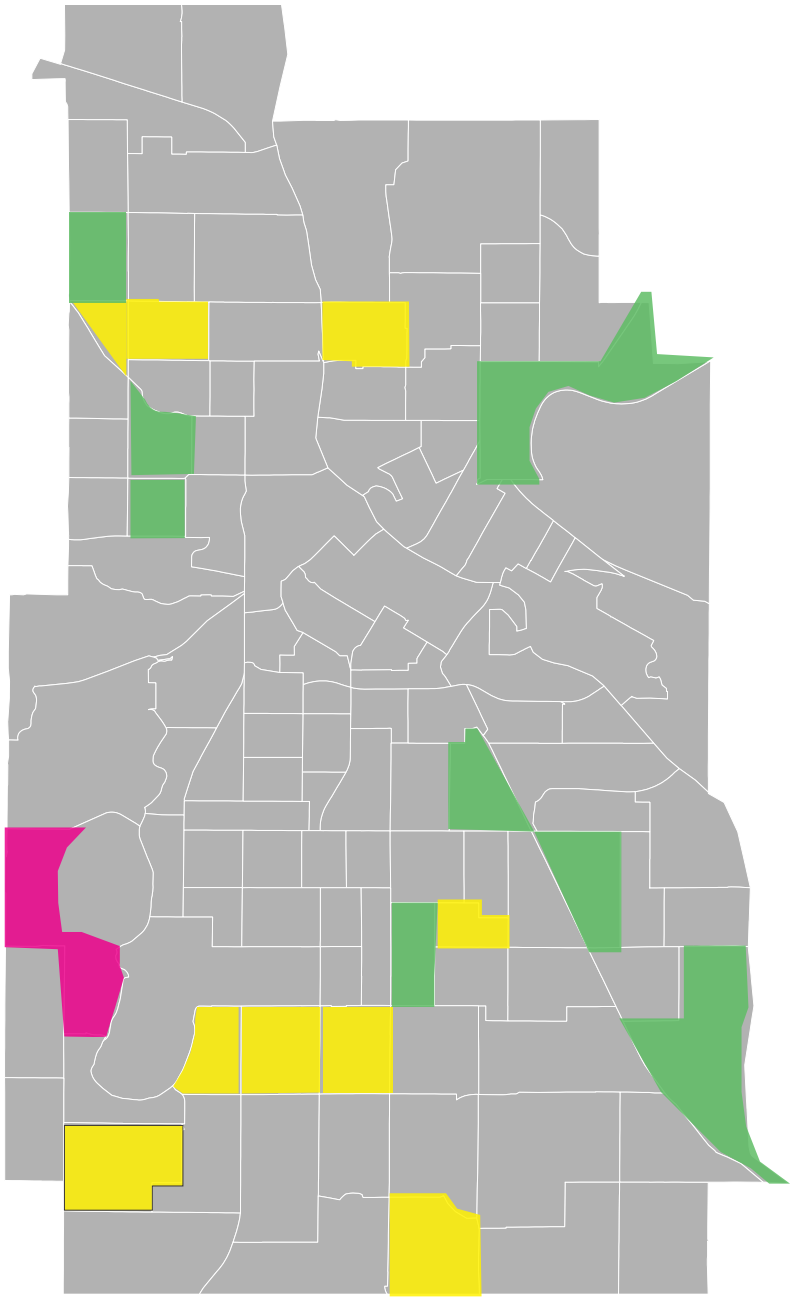
Are the pathways in place?

Are there places to go?

Do you want to make the trip ?

The colored census tracts represent census tracts in the top 50 in two scores and the bottom 50 in one score. The color corresponds to the category of the low score.

Total Score + Rank Analysis Map



Action Steps

Action Plan

The creation of the 'human scale' model and it's application to the City of Minneapolis is only as valuable as its ability to be used by planners, policymakers and residents. For this project to have the largest impact on the lives of Minneapolis residents, the City of Minneapolis must commit to the continual growth and refinement of the model as well as its integration into the City's planning processes and public engagement.

The action steps provide a road map for City of Minneapolis planners and staff to utilize and build upon this project to accomplish the overall of increasing access, shifting modes and improving residents' lives through human scale mobility.

Action Timelines

Short term: within six months

Medium term: six months to three years

Long term: three years to ten years

COSTS

$ Under $500/Under 30 hours

$$ $500-$5,000/30-200 hours

$$$ $5,000- $20,000/200-800 hours

$$$$ Over 20,000 OR Over 800 hours

Action Plan: Short Term

These objectives can begin once the final deliverable is presented to the client. The objectives are clear transitions from the information gathered from the capstone and do not require engagement or public facing tasks. Therefore, the short-term objectives are estimated to be completed within six months. The theme of the short-term objectives is to gather additional data that could not be obtained for the project, but can significantly enhance the existing assessment of the 20 minute neighborhoods by census block in Minneapolis. The additional variables account for conditions in walking and biking that are important in creating ideal movement conditions.

Short Term Action #1: Collect additional data to add to the model

Outcome + Purpose:

The model can be changed by adding variables to make the results more accurate in understanding which census blocks provide the greatest mobility for its residents. The initial model was created with data that exists and is readily available. We would suggest adding the following data into the model:

- Data that addresses large obstructions like industrial park, natural features
- Locations of Public Art
- Commercial Corridors
- Narrow definition of 'grocery stores' which serve fresh food
- Places of worship
- Events and activities
- Canopy cover

Cost: $-$$

The cost of this action is highly dependent on the data needed. Some of the data may already exist, but may not have been given to the City or to the Public Works Department. This will not take much time or funding because if this is the case, staff may simply have to reach out to stakeholders. Some information, the City may also agree that the information is necessary, but is not readily available. Then, staff will have to go out and collect data taking up staff time. This role would be substantial, potentially about 10% of an individual's workload, but would not need to be given to an entirely new position.

Responsible Parties: Public Works Department: Transportation

Action Plan: Short Term

Short Term Action #2: Sharing results with specific departments so that they may understand and analyze their role in promoting and providing the 20-minute neighborhood. Drives departments to do better.

Outcome + Purpose:
With this tool, departments are able to visualize their role in promoting and providing the 20 minute neighborhood. This may drive departments to increase effectiveness in their specific areas or emphasize their services in an area that may be lacking specific amenities or infrastructure components.

Cost: $-$$
The work is estimated to take about 30 hours of staff time.

Responsible Parties: Public Works Department: Transportation

Action Plan: Medium Term

The medium-term actions seek to refine and incorporate the model and recommendations into the City of Minneapolis' plans and process. These actions will continue the momentum of the project and ingrain it into the City's longer-term plans to ensure its use. Building community support and input during this phase will increase the interest, use and success of the tool by actively engaging residents. Refining the model through residents' lived experiences will not only create a better tool but create exposure and legitimacy to the tool for use in future planning and capital projects.

Medium Term Action #1: Survey residents about human scale mobility experience and compare the results to the model.

Outcome + Purpose:

By surveying residents on their lived experiences walking, biking and traveling within their neighborhood, the City of Minneapolis will be able to better understand how well the model's metrics and analysis fit with real life perceptions and experiences of residents of Minneapolis. This analysis will assist the City of Minneapolis in adjusting the metrics and weights of metrics to create a more accurate model to describe 'Human Scale Mobility' conditions throughout the city.

Cost: $$$

Costs are high due to design and delivering the survey and the large capacity of staff necessary to create and conduct the survey.

Responsible Parties: City of Minneapolis Public Works: Transportation with assistance from Neighborhood Community Relations Department.

Potential Partners: University of Minnesota, Humphrey School: Graduate Community Engagement Class, Center for Urban and Regional Affairs: Resilient City Project, Project Partner, Neighborhood Associations, Cultural Groups and other local organizations

Action Plan: Medium Term

Medium Term Action #2: Use 2020 census data to update demographic information and compare with 'Human Scale Mobility' scores

Outcome + Purpose: This action is mainly updating information so that the City can use the data and apply recommendation steps so that more people can feel comfortable and have the opportunity to walk or bike to destinations in all of Minneapolis. Collection and plugging in the data is relatively quick and simple, but the information will not be available until March of 2021 and therefore the majority of the time in this step will be waiting for the information.

Cost: $$$
Low staff time needed to input the demographic information and overlay with the over 'Human Scale Mobility' condition results.

Responsible Parties: Public Works Department: Transportation

Action Plan: Medium Term

Medium Term Action #3: Incorporate the results of the 'Human Scale Mobility' study into a section of the City's Transportation Action Plan (TAP).

Outcome + Purpose:

Human scale mobility encompasses many aspects of transportation and its place in the TAP may initially seem unclear due to its broad topics. Significant consideration must be made to where the information fits best in the TAP so that the study's results can lead to the most impactful changes to neighborhoods. The goals that are the most relevant to human scale mobility and the 20-minute neighborhood in the TAP are mobility and equity. The overall project can fit well in the mobility portion, tying in the psychological barriers that deter people from walking or biking to destinations as well as the environmental benefits of having nearby destinations. The comparison of who does and does not live in a 20-minute neighborhood could be incorporated into the equity goals of the TAP. In this section, prioritization of where investment should go to improve a 20-minute neighborhood can be detailed for areas that do not have any aspects of a 20-minute neighborhood or are on the cusp of having all of the qualifications to create fair and just opportunities for all. Alternatively, an additional section or concluding section could be added to the TAP if the City feels that human scale mobility summarizes and consolidates multiple goals together.

Cost: $$$

Re-wording to match the style of the TAP to our project may take time. Additional conclusions from the results of the project may need to be made to make apparent connections between the data and the implementation steps in the TAP.

Responsible Parties: Public Works Department: Transportation

Action Plan: Long Term

The suggested long term actions seek to refine and build a tool for the use of all City of Minneapolis departments and residents. These items would open up the model and allow residents and other Minneapolis departments to discover how neighborhoods compare in their level of Human Scale Mobility. Understanding that not all residents are looking for the same things in terms of their mobility, the tool should allow residents, planners and other city officials to shape the model according to specific demographic characteristics, abilities or preferences.

Long Term Action #1: Institutionalize model and tool into the analysis of capital project prioritization, analysis and corresponding community engagement.

Outcome and Purpose: By creating a universal metric and model for measuring an areas walkable, bikeable and overall Human Scale Mobility metrics the City of Minneapolis would be able to apply more rigor and purpose into the improvements and planning they do. By officially building the use of this model into the analysis of future projects the City of Minneapolis can ensure that it is understanding and communicating the effects and value of its human scale mobility improvement projects.

Cost: $$$
Staff time and effort to create use and implementation guidelines

Responsible Parties: Public Works Department: Transportation

Action Plan: Long Term

Long Term Action #2: Use survey information, census data and demographic information to create more targeted models for a variety of Minneapolis residents and build a public tool that allows features and metrics to be adjusted in real time to understand how the city is functioning for all its residents.

Outcome and Purpose: We know that not all residents of Minneapolis experience space and mobility the same way. Older residents or people with disabilities may have a harder time walking further distances or biking. Children or younger families may value proximity to specific locations like parks and community centers over bars or specialty shopping. Low-income residents may value proximity to high-frequency transit lines and affordable food options. Being able to create a tool that allows current and future residents of Minneapolis to analyze areas in terms of their preferences and needs will help residents choose places to live and what features their current neighborhood lacks. This information will also allow residents to quantify and advocate for improvements to 'Human Scale Mobility' in their neighborhoods.

City Departments will also be able to use this tool to analyze the efficacy and impact of projects and programs intended to improve mobility for residents. A tool that shows not only the overall "mobility score" for an area but how well places are working for specific populations and people will help the City understand who is currently served by its infrastructure and who will benefit from improvements.

Cost: $$$$
Staff time to gather information and refine metrics for specific demographic population. Costs to implement interactive online tool open to city staff and residents.

Responsible Parties: Public Works Department: Transportation

Action Plan: Long Term

Long Term Action #3: Use the analysis and results from the model to focus investment, energy and planning around the areas of highest impact and/or need.

Outcome and Purpose: The analysis provides us with some key findings and correlations from the results of the model. These finding help identify specific actions and locations that will have the largest impact on residents experience of the conditions for Human Scale Mobility options.

(1) Invest in census tracts which are high in two metrics and low in the third: The rank analysis provides an inventory of the census tracts which are high in two metric categories and low in a third. These census tracts have the highest potential for improvements to human scale mobility conditions since the majority of the conditions in the census tract are high and the improvement of one metric category could create significant overall improvement to the census tracts' conditions.

(2) Focus investment and development around historic streetcar corridors: As shown in the streetcar analysis, there seems to be a high correlation between Human Scale Mobility conditions and the location of historic street car lines. This seems to be especially true for where these lines historically terminated. This pattern would suggest that the development and patterns of the street car lines created conditions much more conducive to walking, biking, etc. Focusing development and investment in these areas will build off a strong base for human scale conditions and give more residents access to these areas.

(3) Investments and planning in areas with higher densities and lower scores: Areas with high densities but low scores in Human Scale Mobility conditions are places where investments and planning can have large impacts due to the number + density of people within that area. Census tracts to focus on within this category would be:

- 1039: Northeast/Dinkytown
- 1028: North Minneapolis, Broadway/Near North Neighborhood.
- 33: North Minneapolis, Near North/Harrison Neighborhood

Cost: $ - $$$$

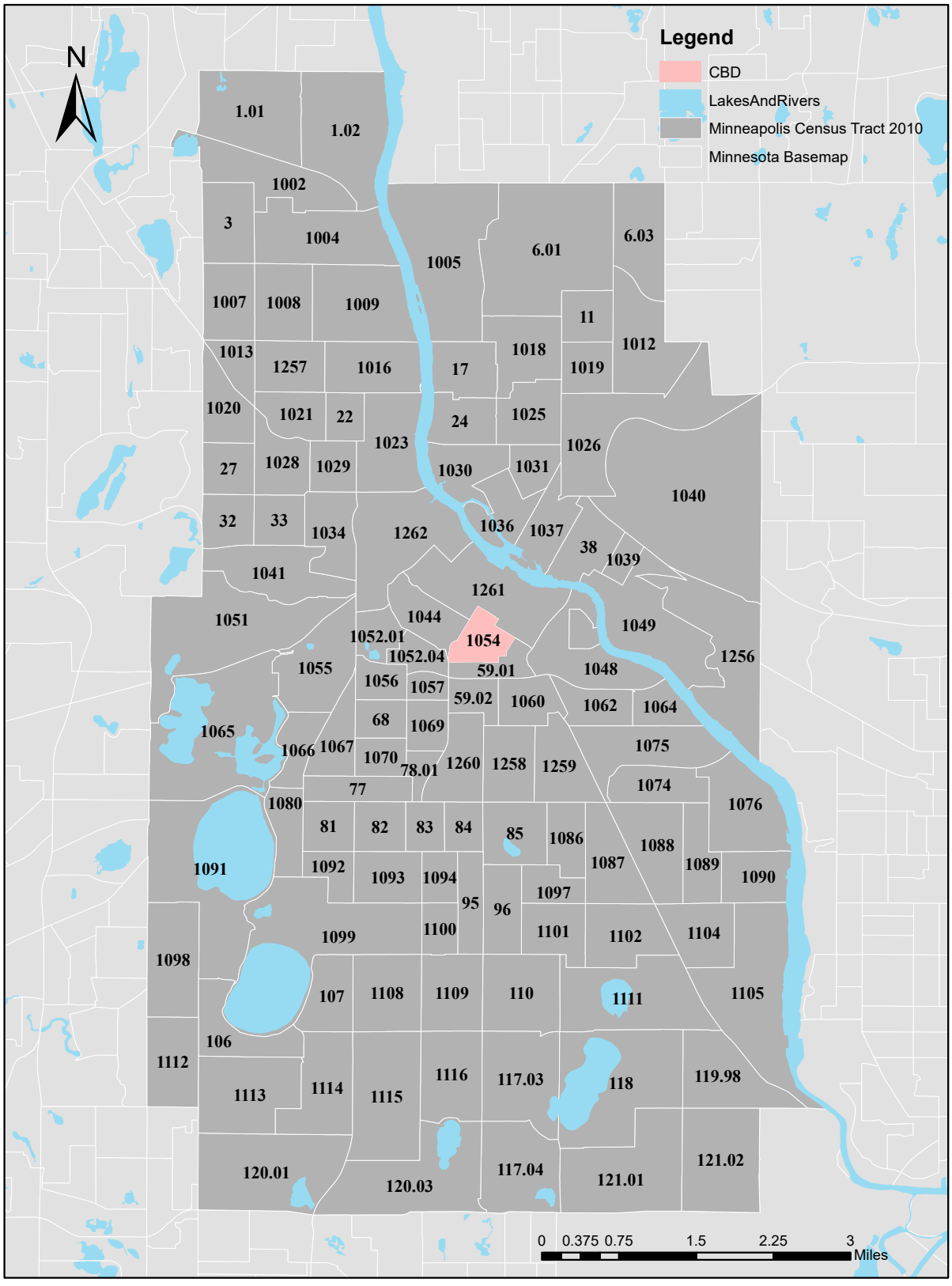
Responsible Parties: All City Departments

Appendix

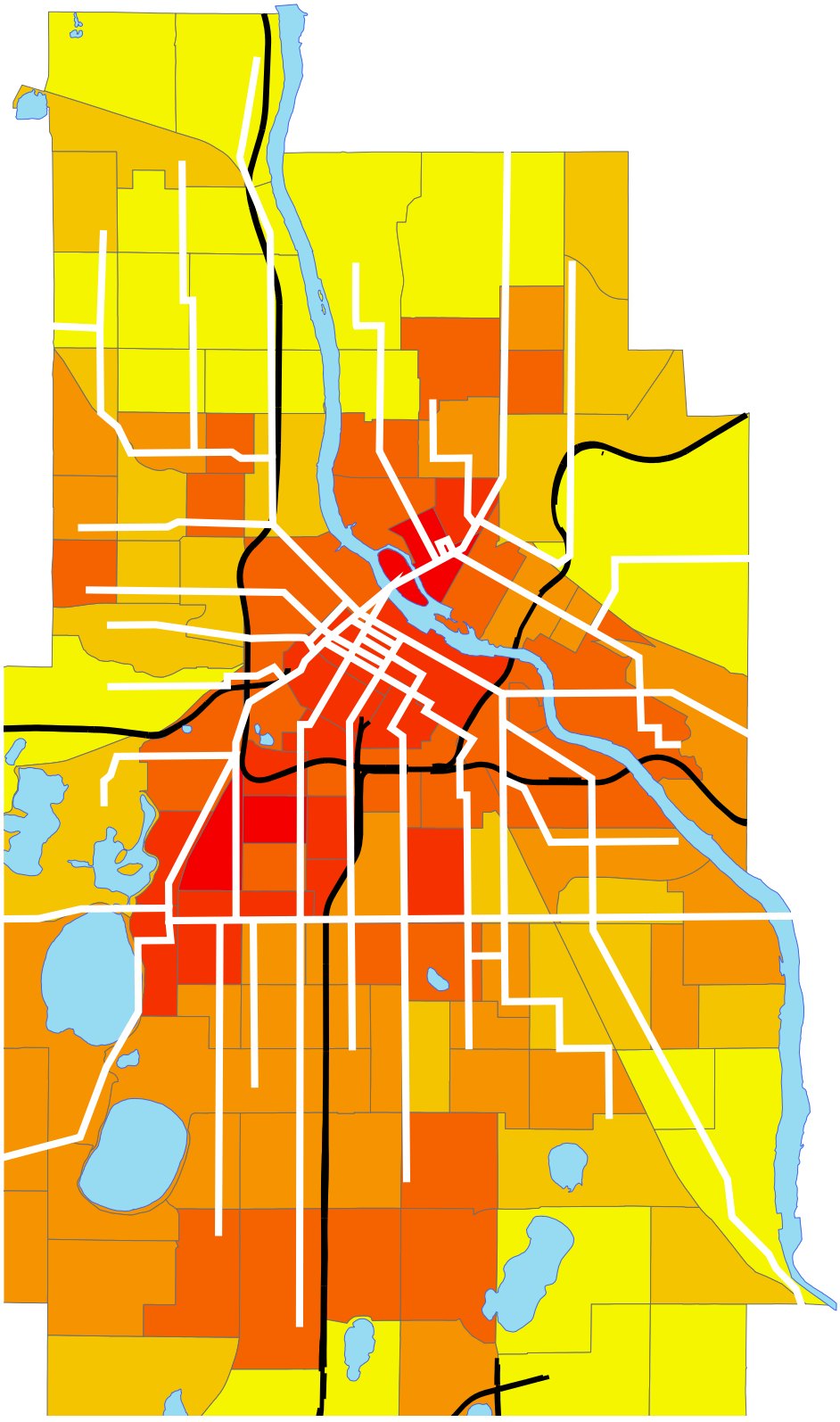

RUONG THANH
FOOD, FRESH PRODUCE & SEA FOOD
CHINESE HERBS & GIFTS
TEL.(612) 879-0561
OPEN
2520
NOW HIRING

Minneapolis Census Tract Map

This map shows the census tracts and their corresponding census tract numbers in the City of Minneapolis. The colored census tract,1054, is the tract used as the CBD.

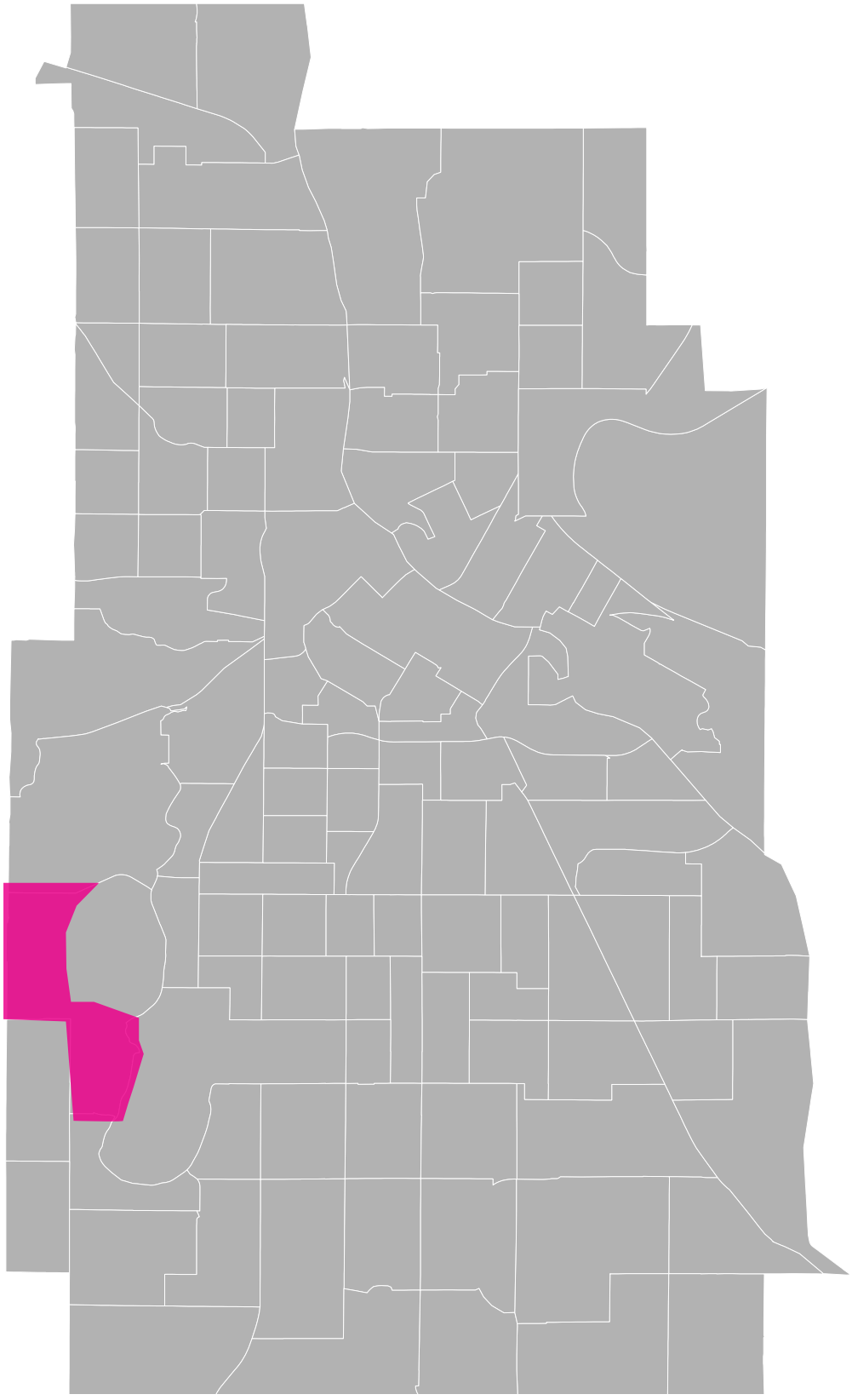


Map: Analysis- Legacy Transportation+ Total Score



Low Score — High Score

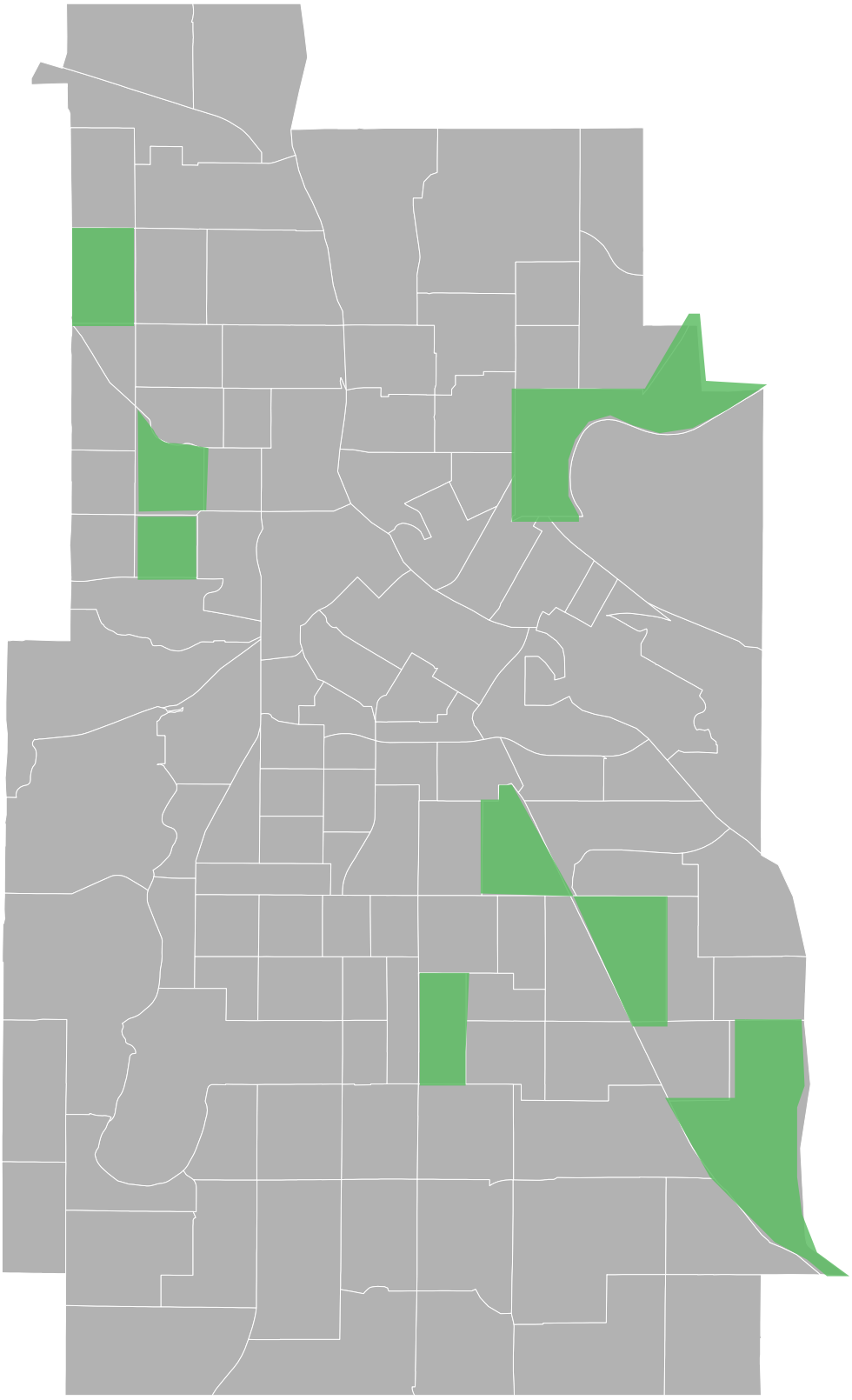
Map: Rank Analysis- Low in "Are the Pathways in Place"



Are the pathways in place?

The colored census tracts represent census tracts in the top 50 in two scores and the bottom 50 in one score. The color corresponds to the category of the low score.

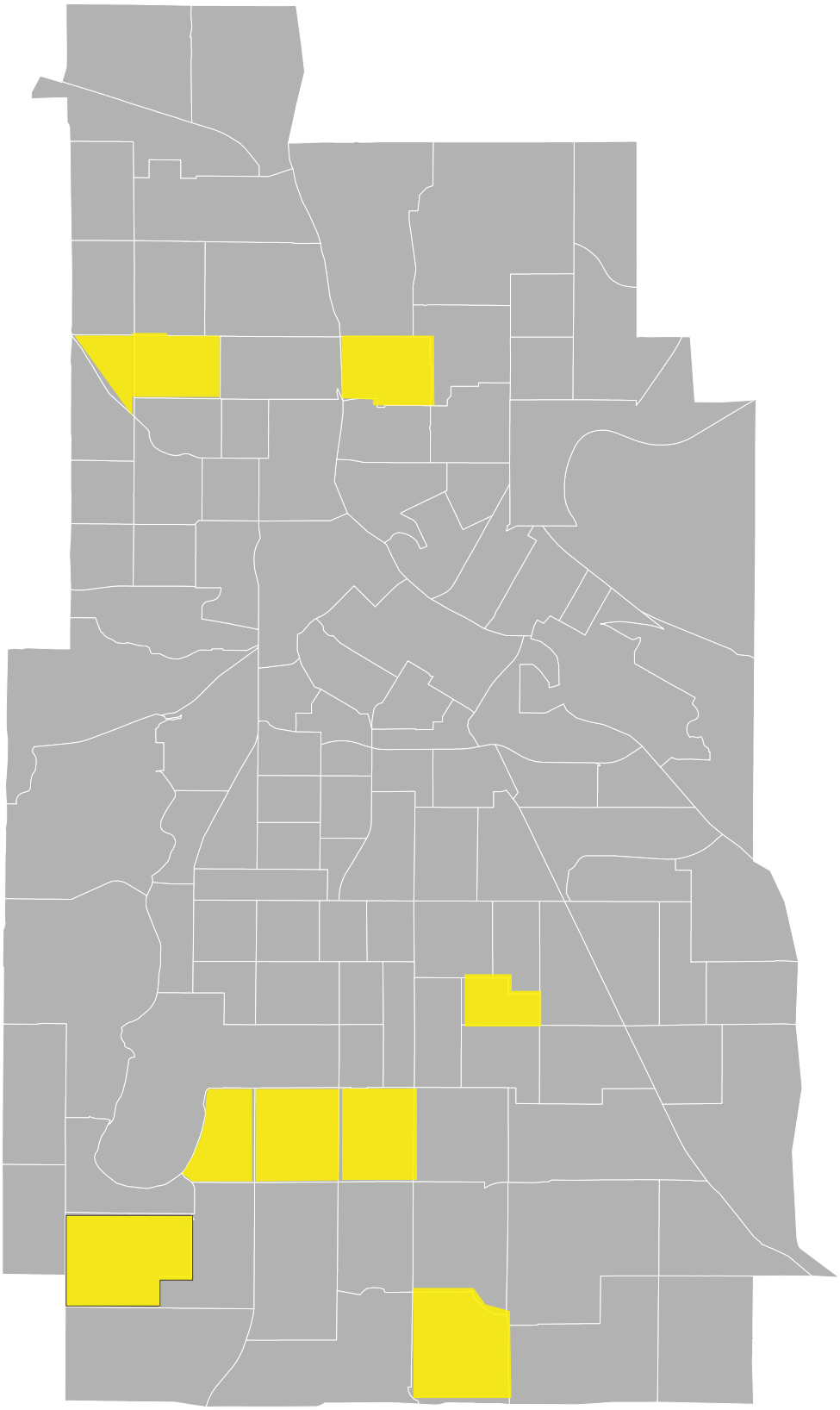
Map: Rank Analysis- Low in “Do you want to make the trip?”



Do you want to make the trip ?

The colored census tracts represent census tracts in the top 50 in two scores and the bottom 50 in one score. The color corresponds to the category of the low score.

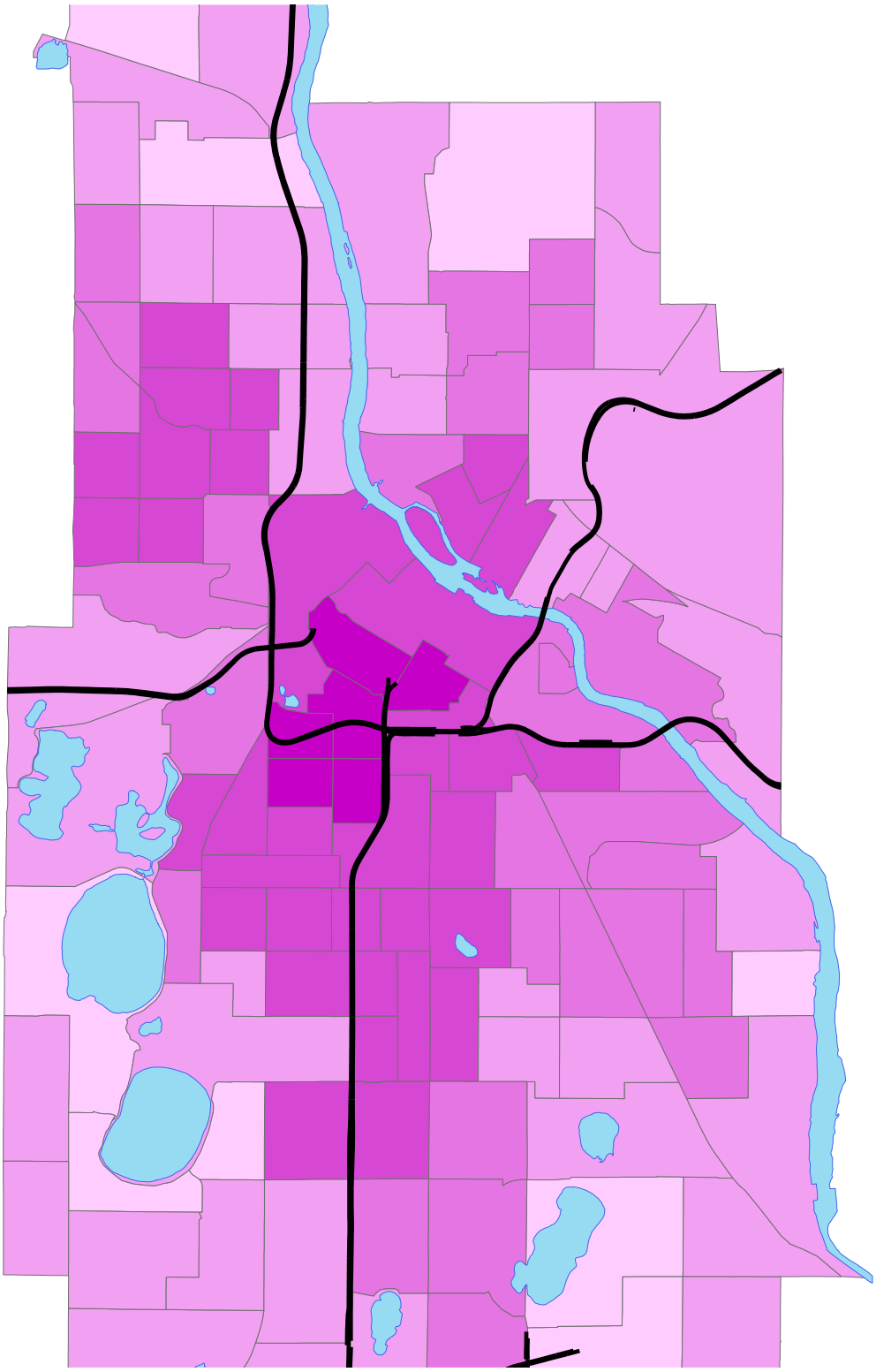
Map: Rank Analysis- Low in "Are there places to go"



Are there places to go?

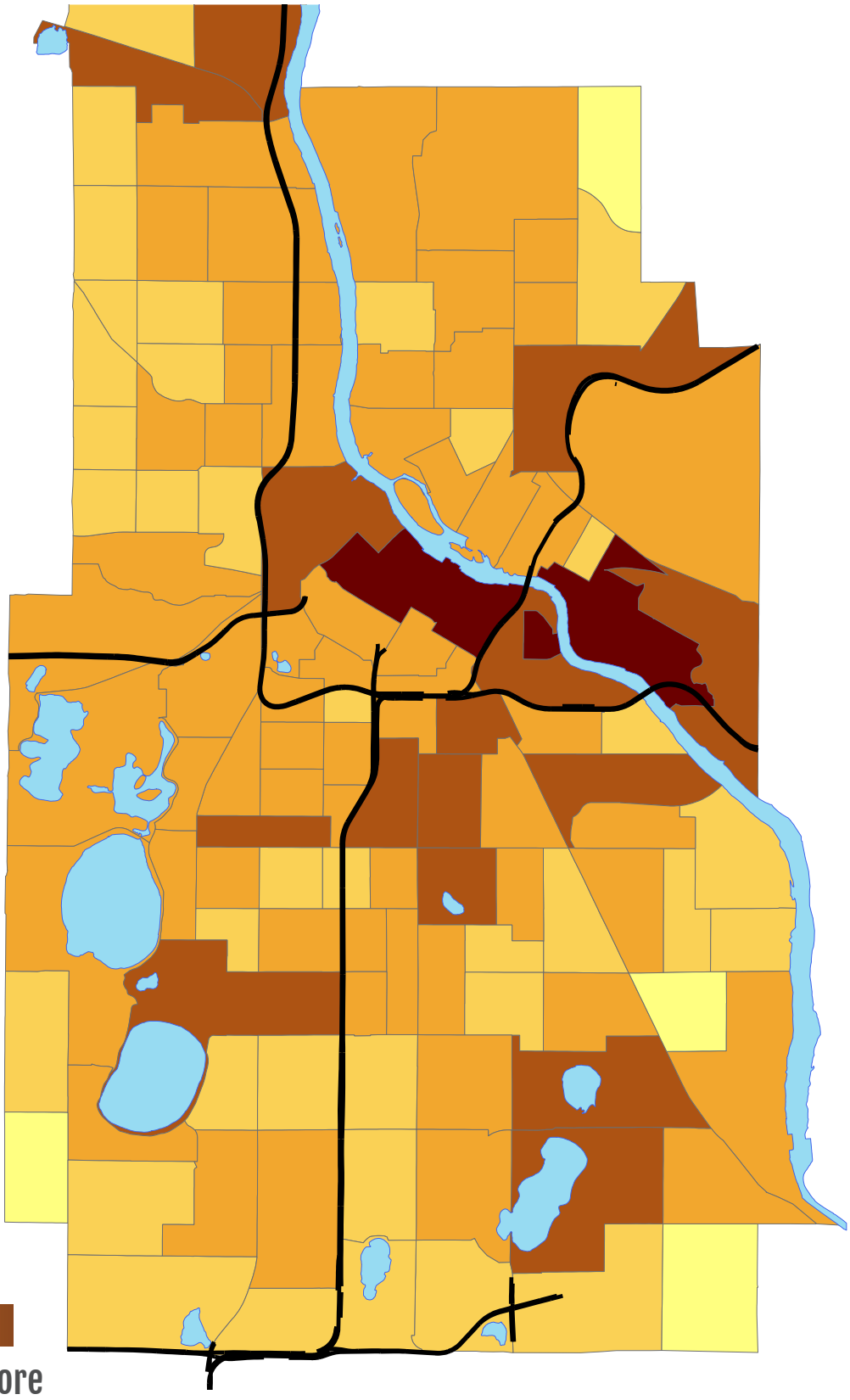
The colored census tracts represent census tracts in the top 50 in two scores and the bottom 50 in one score. The color corresponds to the category of the low score.

Map: Results-Are the pathways in place?



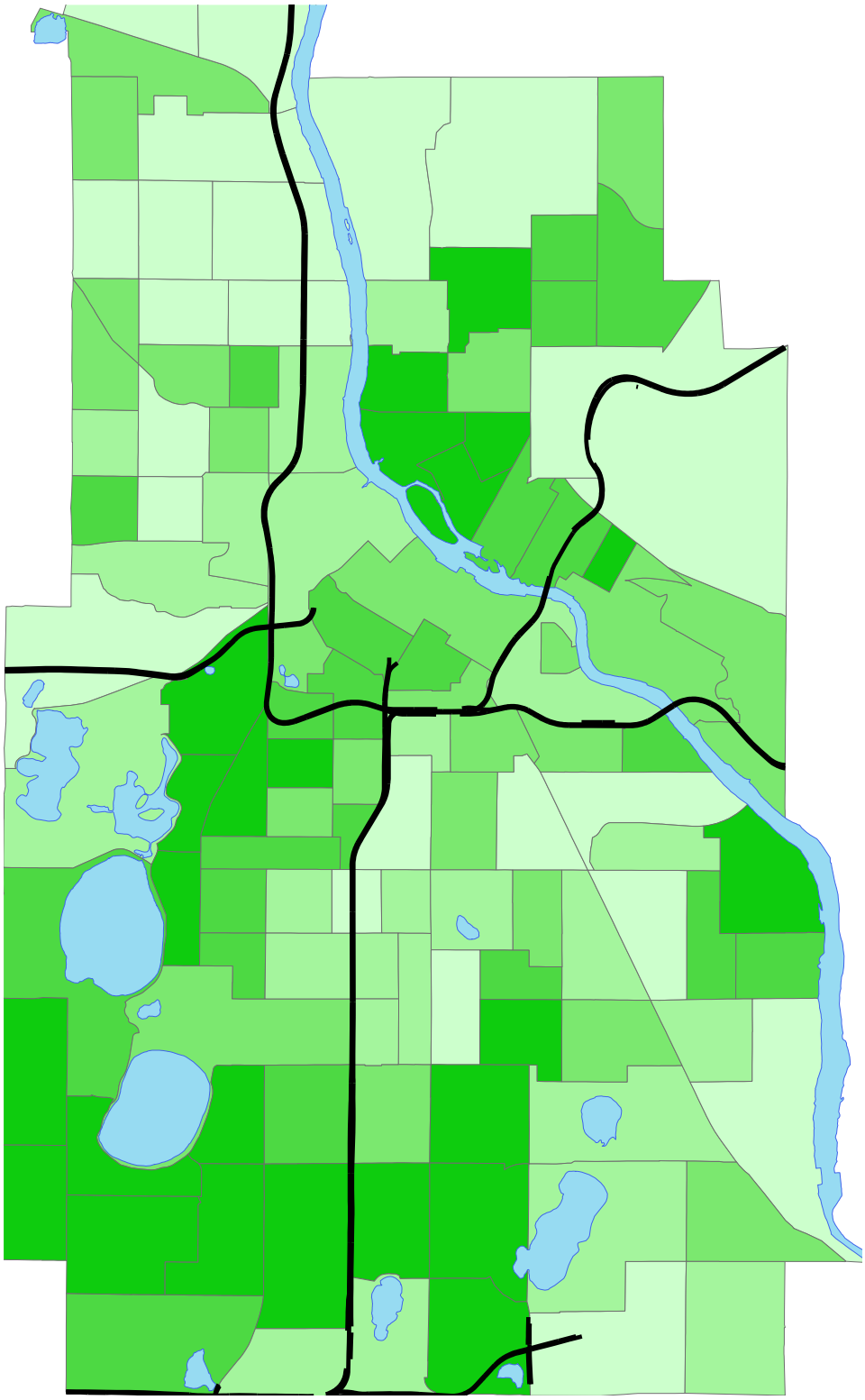
Low Score — High Score

Map: Results-Are there places to go?



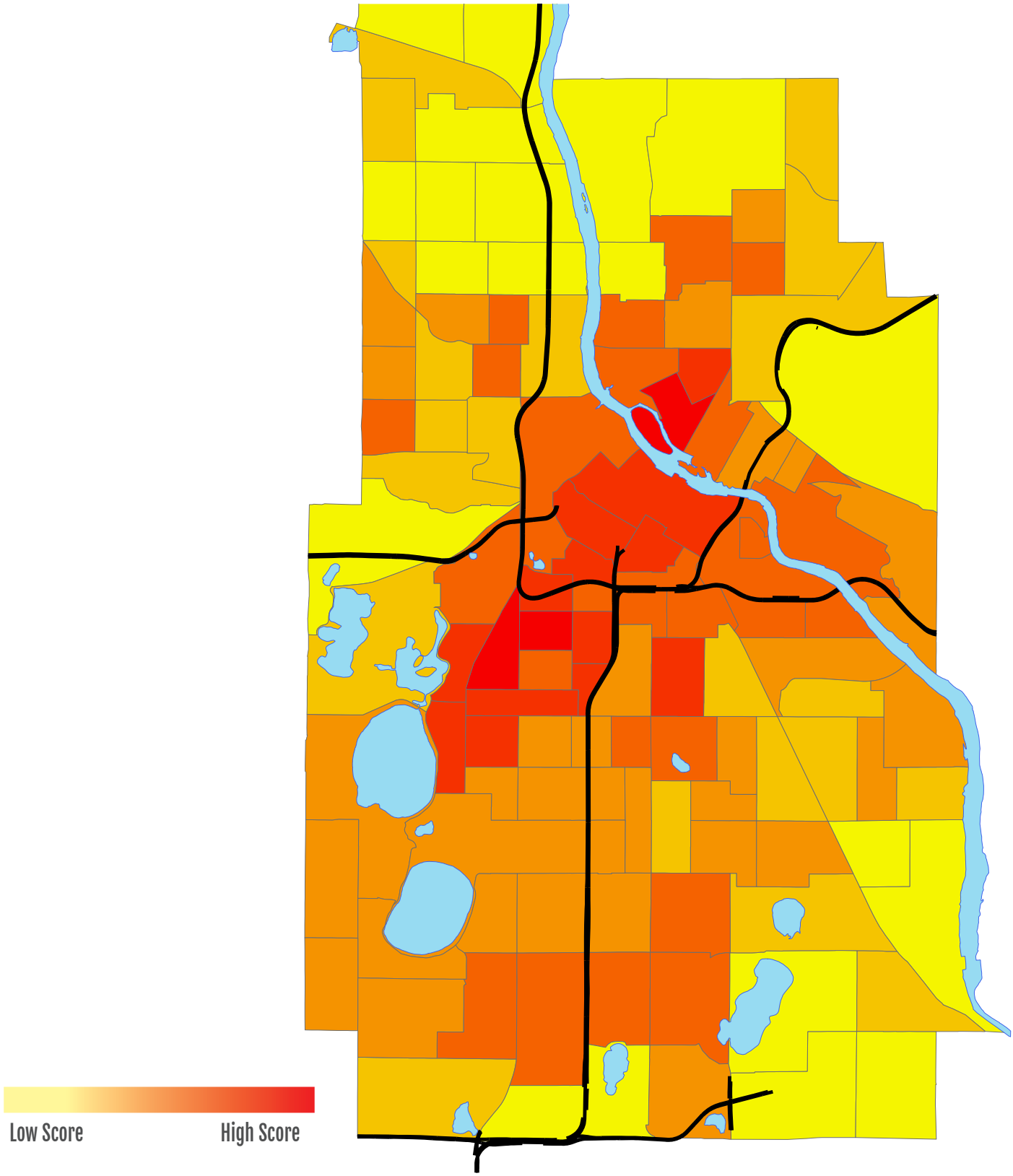
Low Score High Score

Map: Results-Do you want to make the trip?

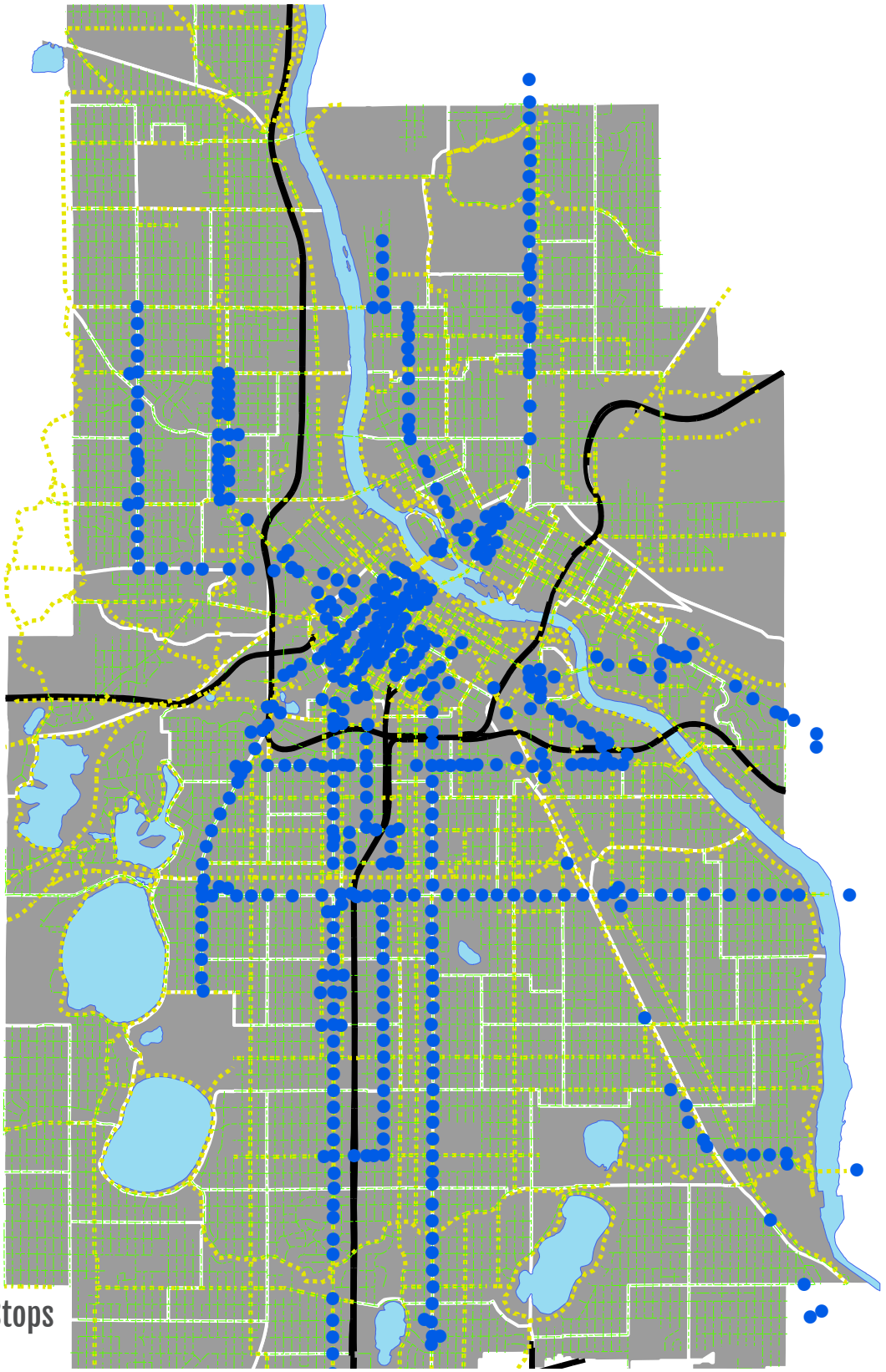


Low Score High Score

Map: Results-Total Score



Map: Metrics- Are the pathways in place?

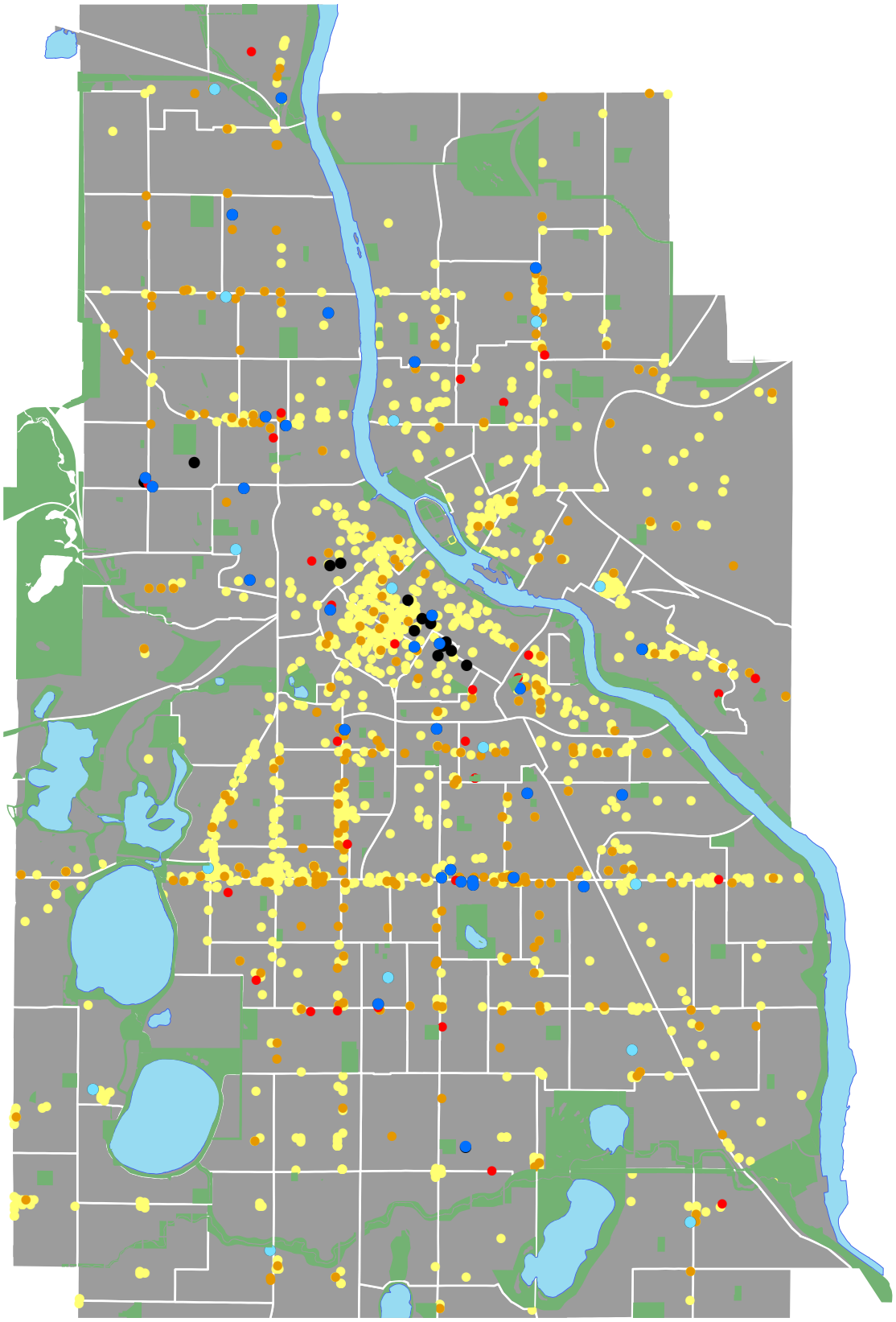


High Frequency Transit Stops

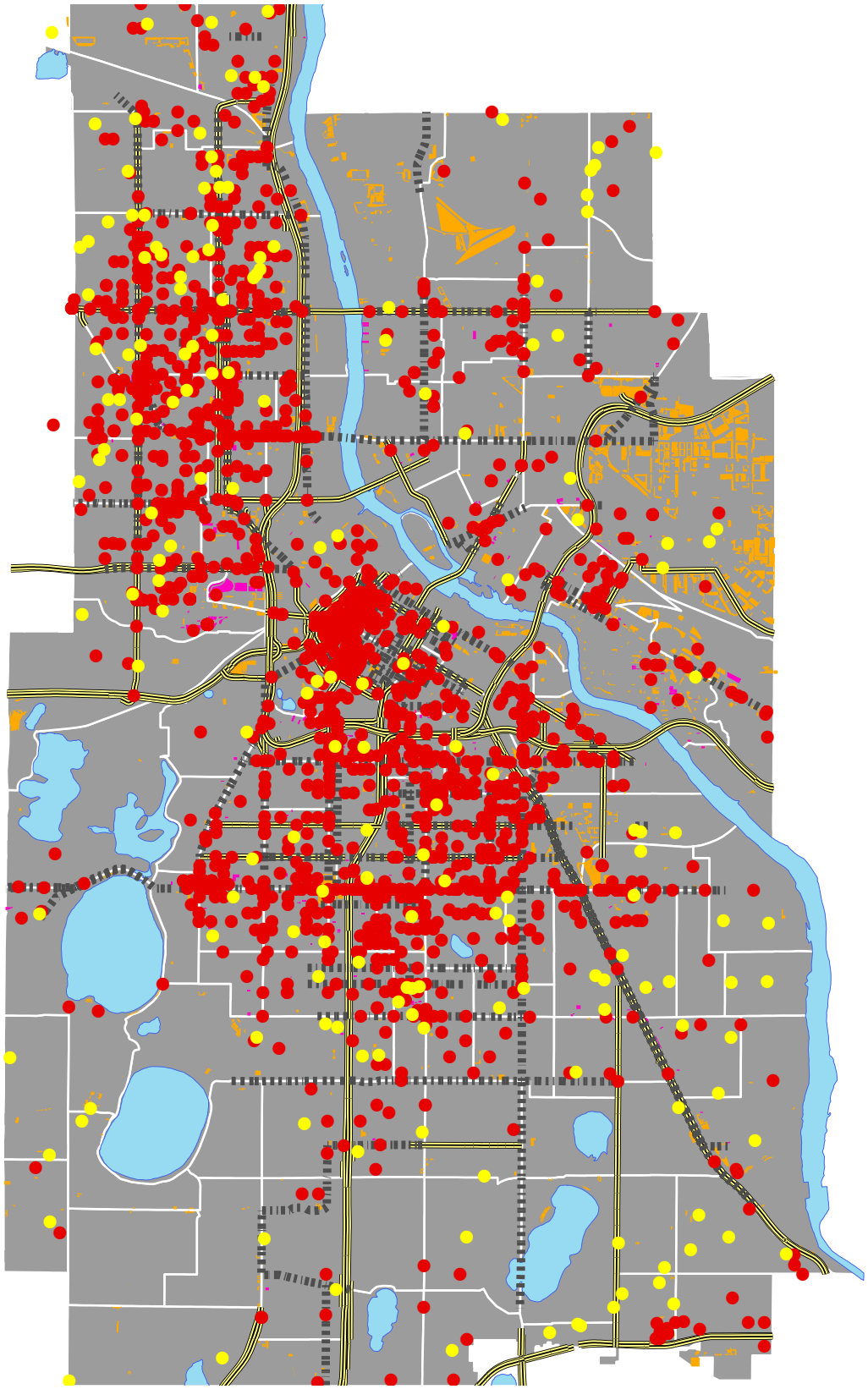
Sidewalks

Bike Facilities

Map: Metrics: Are there places to go?



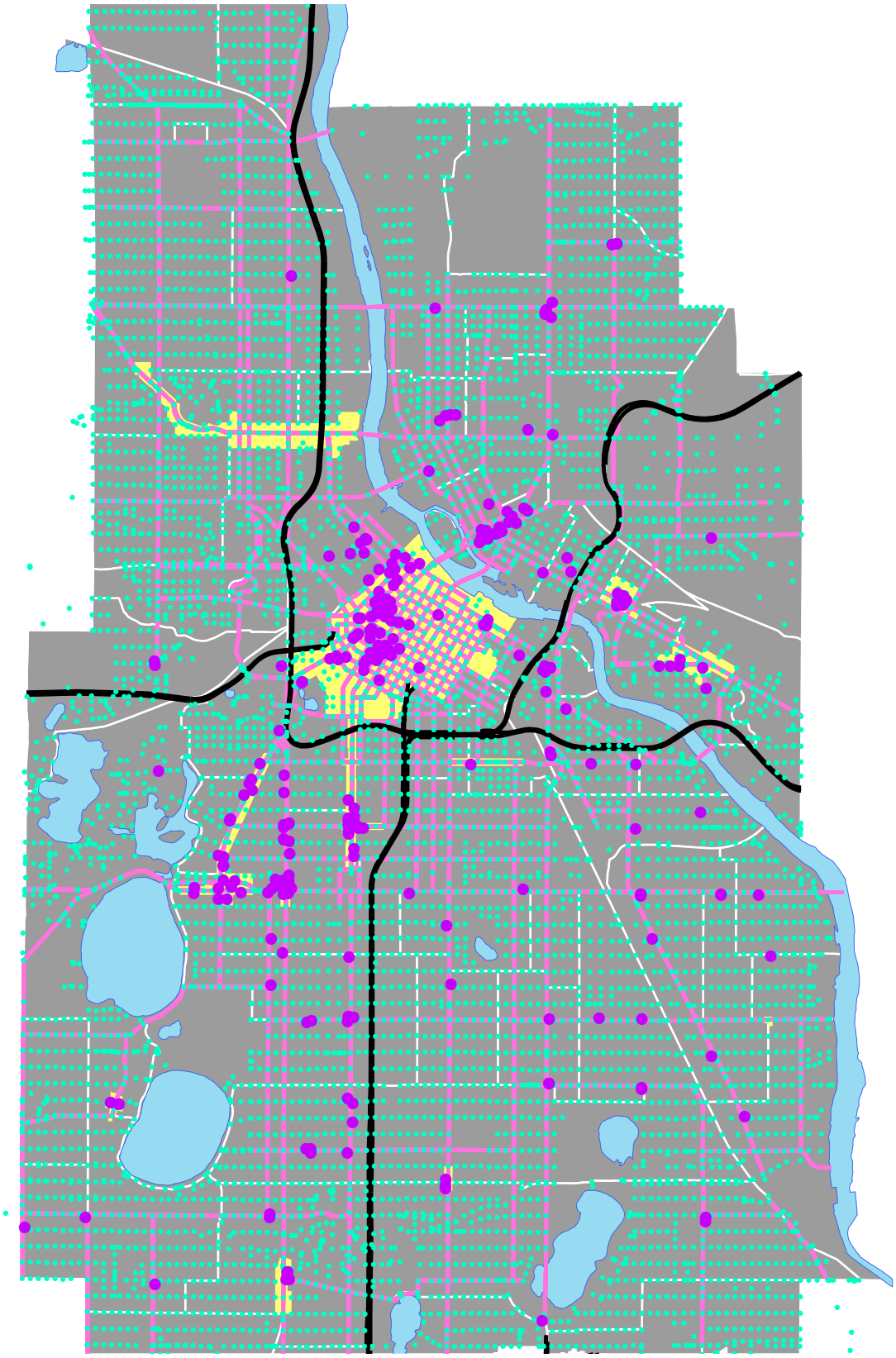
Map: Metrics-Do you want to make the trip? (Negative)



Safety
- Crimes
- Crash Corridors

Experience
- Parking Lots
- Vacant Apartments
- Foreclosures
- Arterial Roads

Map: Metrics-Do you want to make the trip? (Negative)



Experience

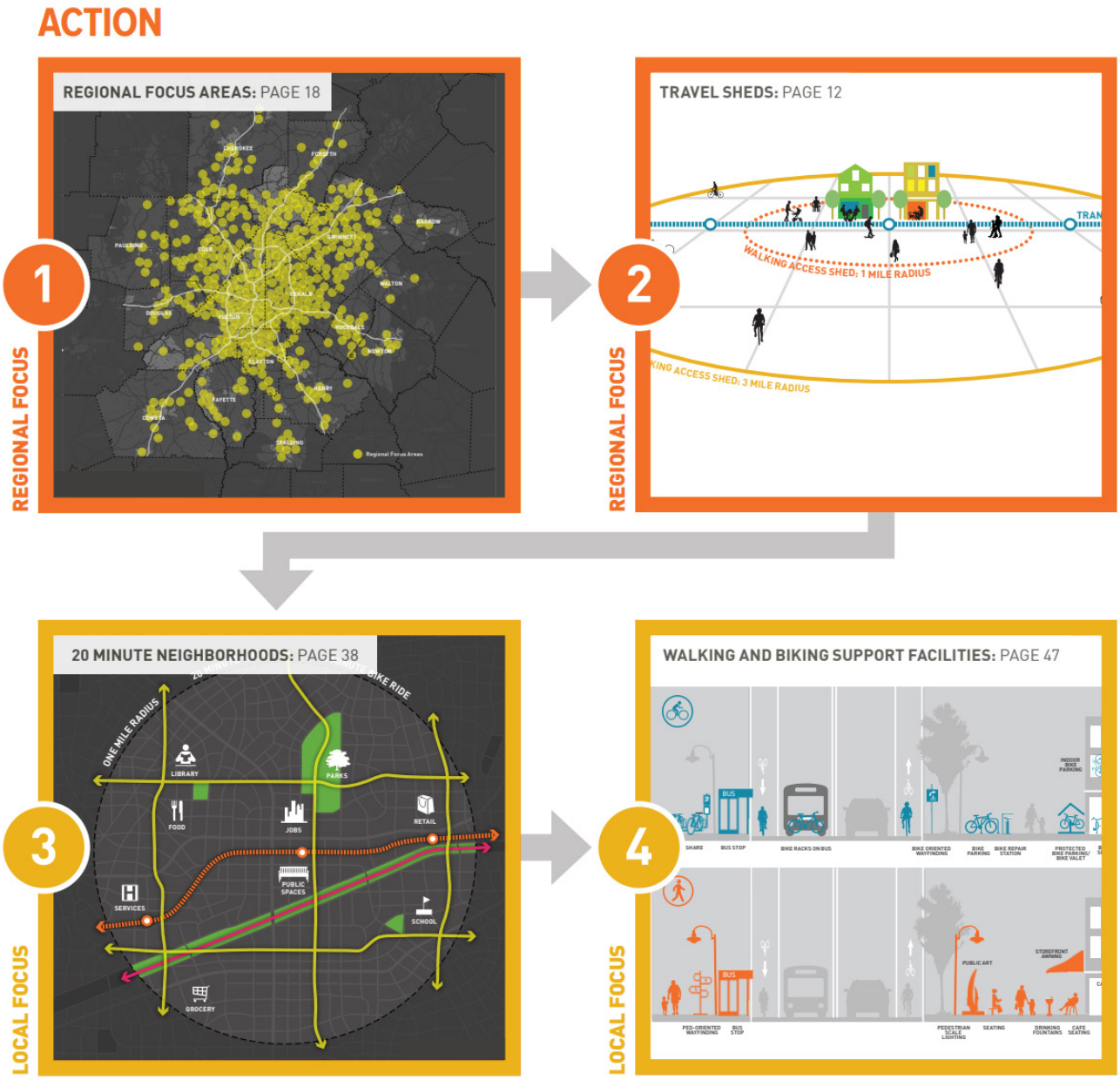
- Intersections
- Pedestrian Lighting Corridors

Activation

- Sidewalk Cafes
- Special Service Districts

Case Study: Walk-Bike-Thrive ATLANTA

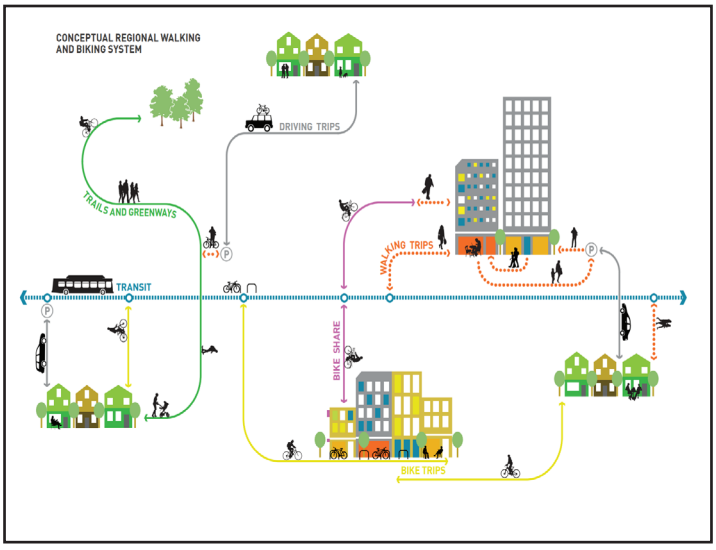
The case study for "Walk-Bike-Thrive Atlanta" was chosen because it analyzed specific components of the '20-minute neighborhood', walkability and bikability within an urban area. "Walk Bike Thrive Atlanta" also used specific metrics to measure the conditions within the Atlanta region as a way of evaluating the current conditions and priority areas/ projects. The City of Minneapolis has also identified this case study as having important qualitative measurements of active transportation and community characteristics that could be transferable to the City of Minneapolis.



Case Study: Walk-Bike-Thrive ATLANTA

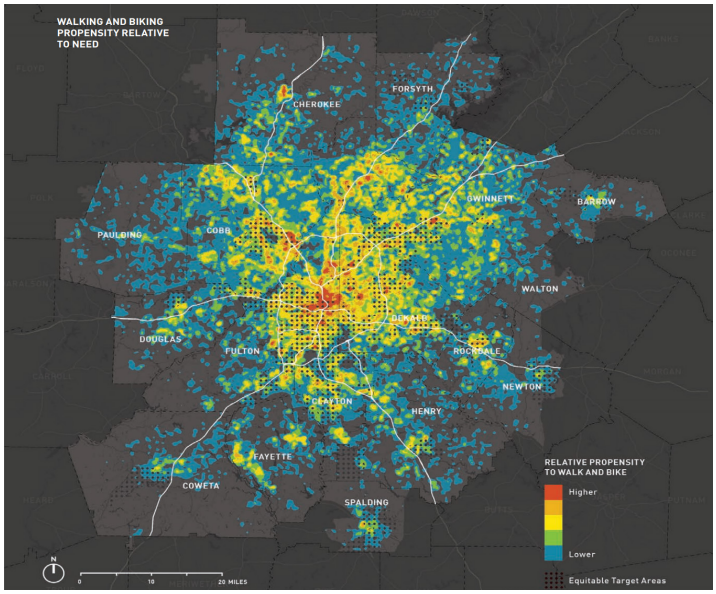
Photo by: Paces Properties

> "....use the region's pivoting growth and fresh momentum so that in 5 years Atlanta can market itself as one of the most walk-friendly and bike-friendly regions in the nation."



MULTIPLE MODES

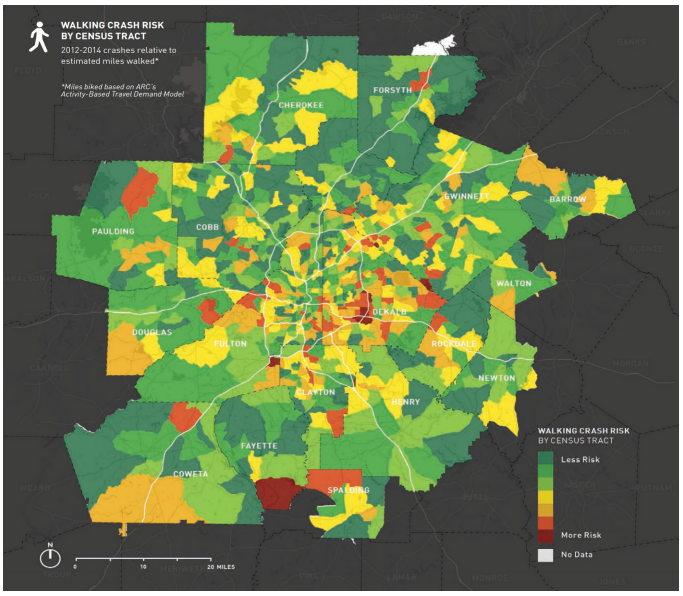
Atlanta identifies one goal of their "Bike to Ride" program as increasing access to transit stops so that people biking, and walking can lengthen their reach by combining modes. The plan identifies physical and psychological barriers that prevent residents from using active transportation. These were addressed by increasing the standard for bike parking at transit stations as well as creating a low-stress environment for cyclists.



SCORECARD

Atlanta Regional Commission created a scorecard used to prioritize regional active transportation projects. The scorecard evaluates the location of the project based on demand and propensity of walking and biking trips, if users depend on active transportation, crash rates, and if it is in an existing walk or bike-friendly community.

Case Study: Walk-Bike-Thrive ATLANTA



SAFETY

Atlanta's implementation strategies for safety with Vision Zero as its guiding theme are to fund safe projects and create data-driven solutions. The Atlanta Plan approaches safety with a Vision Zero mindset by focusing on proactively reducing the risk of crashes and employing a systematic approach to create a safe street network. They identify the cause of unsafe conditions as inconsistent design and guidance through street infrastructure as well as the user of the roads.

"When Kaiser Permanente was looking for a site for its new innovation and information technology hub for 900 new employees, the company sought public transit and a walkable community."

20-MINUTE NEIGHBORHOOD

The "Walk, Bike, Thrive" policy also highlights the importance of a 20-minute neighborhood, where all services to the user can reach within a 20-minute walk, blocks are 300-600 feet long, and there are connections to other transit options such as bike trails or public transit corridors.

SUMMARY

The Atlanta transportation plans outlines the essential components needed to support 'Human Scale Mobility' and recommends specific action steps to support individual modes such as biking and walking. This report builds on the approach taken in the Atlanta plan by evaluating infrastructure, destinations and experience as essential decision points in a residents choice of mode.

Citations

(1) “About Us.” Minneapolis Park & Recreation Board, www.minneapolisparks.org/about_us/.
(2) “Bicycling Program Home.” Bicycling in Minneapolis , City of Minneapolis, www.ci.minneapolis.mn.us/bicycles/.
(3) Boyle, Robin. “Could the 20-Minute Neighborhood Work in Detroit?” Detroit Free Press, Detroit Free Press, 15 June 2016, www.freep.com/story/opinion/contributors/2016/06/14/could-20-minute-neighborhood-work-detroit/85847554/.
(4) Charles, Cheryl, and Richard Louv. “Children & Nature Network.” Sept. 2009.
(5) Diers, John W., and Aaron Isaacs. Twin Cities by Trolley the Streetcar Era in Minneapolis and St. Paul. University of Minnesota Press, 2007.
(6) Minneapolis Bicycle Master Plan. Minneapolis, Minnesota. 2011.
(7) Minneapolis Pedestrian Plan. Minneapolis, Minnesota. 2009.
(8) Minneapolis 2040. Minneapolis, Minnesota, 2018.
(9) National Household Travel Survey. US Department of Transportation Federal Highway Administration. 2017.
(10) Piatkowski, Daniel, et al. “Measuring the Impacts of Bike-to-Work Day Events and Identifying Barriers to Increased Commuter Cycling.” Journal of Urban Planning and Development, vol. 141, no. 4, 2014, p. 04014034., doi:10.1061/(asce)up.1943-5444.0000239.
(11) Schiefer, David, and Jolanda Van der Noll. “The Essentials of Social Cohesion: A Literature Review.” Social Indicators Research, vol. 132, no. 2, 2016, pp. 579–603., doi:10.1007/s11205-016-1314-5.
(12) Tempesta, Tiziano. “Benefits and Costs of Urban Parks: a Review.” Firenze University Press, Dec. 2015, doi:10.13128/Aestimum-17943.
(13) Todd, Jessica E., and Benjamin Scharadin. “Where Households Get Food in a Typical Week: Findings From USDA’s FoodAPS.” US Department of Agriculture, July 2016.
(14) “USDA Defines Food Deserts.” American Nutrition Association, americannutritionassociation.org/newsletter/usda-defines-food-deserts.
(15) Vision Zero Crash Study. Minneapolis, Minnesota. 2018.
(16) Walk, Bike, Thrive! Atlanta. Atlanta Regional Commission. 16 October 2016.
(17) Walking and Biking Barriers Study. Arlington County Commuter Services, June 2017, 1105am3mju9f3st1xn20q6ek-wpengine.netdna-ssl.com/wp-content/uploads/2017/11/ACCS-Final-Report_Walking-and-Biking-Barriers-Study.pdf.
(18) Where Households Get Food in a Typical Week: Findings From USDA’s FoodAPS.
(19) “AARoads’ Interstate-Guide.” Interstate Guide, www.interstate-guide.com/.
(20) Ecklund, Eric. “Twin Cities Transit Expansion Timeline.” Streets.mn, 30 Nov. 2018, streets.mn/2018/11/30/twin-cities-transit-expansion-timeline/.
(21) Marks, Wizard. “I-35W Disrupted Minority Community, Boxed-in Phillips.” Phillips Neighborhood Network, 1990, www.pnn.org/History/Stories/35W.htm.
(22) Nathanson, Iric. “Linking the Twin Cities: In 1968 the Attention Was on I-94.” MinnPost, 13 June 2014, www.minnpost.com/politics-policy/2014/06/linking-twin-cities-1968-attention-was-i-94/.

Icons